

MARCH 1954

AMERICAN ARTISAN

Warm Air Heating
Residential Air Conditioning
Sheet Metal Contracting



SPECIAL WELDING method is used by shop which produces many custom made sheet metal specialties page 58

• HOW TO HEAT crawl space homes page 62

• INSULATION CUTS air conditioning costs page 66

• WHAT'S YOUR best advertising medium? page 74

• Complete contents of this issue page 4

Air Control

PERIMETER DIFFUSERS

the only complete line
specially designed for
perimeter heating and cooling

PAY DIVIDENDS 3 WAYS

A COMPLETE LINE . . . Here is one source for all your perimeter needs. Combine orders for big quantity discounts! One source simplifies ordering, delivery and inventory, gives you an extra profit on every job.

DO A BETTER JOB . . . Get up to 100% more area coverage with Air Control Dif-

fusers. The higher throw and wider spread truly blankets an area, insuring perfect comfort and satisfied customers.

FOR LESS COST . . . You need fewer runs to do a job with Air Control. That means lower bids and more business for you. It pays to standardize on Air Control.

FOR BASEBOARD PERIMETER SYSTEMS (No. 180 Diffuser)

The flexible unit that installs fast, looks best and costs least...that's the No. 180 by Air Control! Install it in minutes on old or new jobs. Just place back section against wall, make stack-head connection and lock front on. Choose either 4' or 2' sections to suit job...or join several units to create a continuous wall of comfort.



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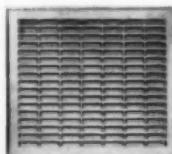
FOR SIDEWALL USE (No. 15 Diffuser)

Blankets up to 14' of wall or window area. The exclusive flared top section and better fin design give you coverage that's unequalled, anywhere! The low resistance factor makes it ideal for either standard trunk or the new high-velocity, small pipe systems.



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These Return Air Grilles are the perfect answer to the problem of centralized returns. They are rugged, low-cost, and good looking, and are available in a wide range of sizes. Easily installed in ceilings, walls, doors—one return in the larger size has enough capacity for a whole system.



PROVE AIR CONTROL SUPERIORITY FOR YOURSELF

Ask your local Jobber or write for the Air Control catalog and price list. Your own experience will tell you the value of the broad Air Control diffuser line...how it saves you money on every installation.



AIR CONTROL PRODUCTS, INC.
DEPT. A COOPERSVILLE, MICHIGAN



GETTING YOUR SLICE of the HEATING MARKET?

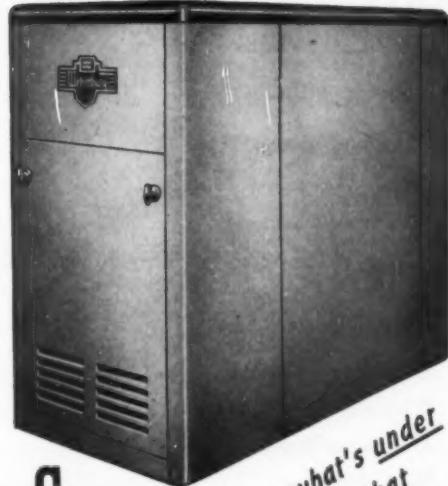
Many of today's alert businessmen are joining the ever-growing family of Waterbury dealers and distributors. Waterbury dealers enjoy, and profit from, reputations that only quality heating equipment, expertly installed, can successfully build and maintain. Equally as important, Waterbury maintains a sound dealer-distributor-factory policy, a policy which assures a profitable future for every Waterbury dealer.



Waterbury
furnaces

AIR CONDITIONERS

If you're not already acquainted with the complete Waterbury line, now is the time to find out about Waterbury's place in your future. Association with Waterbury is good business.



*"It's what's under
the casing that
counts!"*

The **Waterman-Waterbury Co.**

OVER 47 YEARS OF WARM AIR HEATING

1122 JACKSON ST. N. E. MINNEAPOLIS 13, MINNESOTA

AMERICAN ARTISAN

MARCH 1954

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Volume 91 No. 3

WARM AIR HEATING

RESIDENTIAL AIR CONDITIONING

SHEET METAL CONTRACTING

Merged with American Artisan are "Warm Air Heating" and "Furnaces and Sheet Metals"

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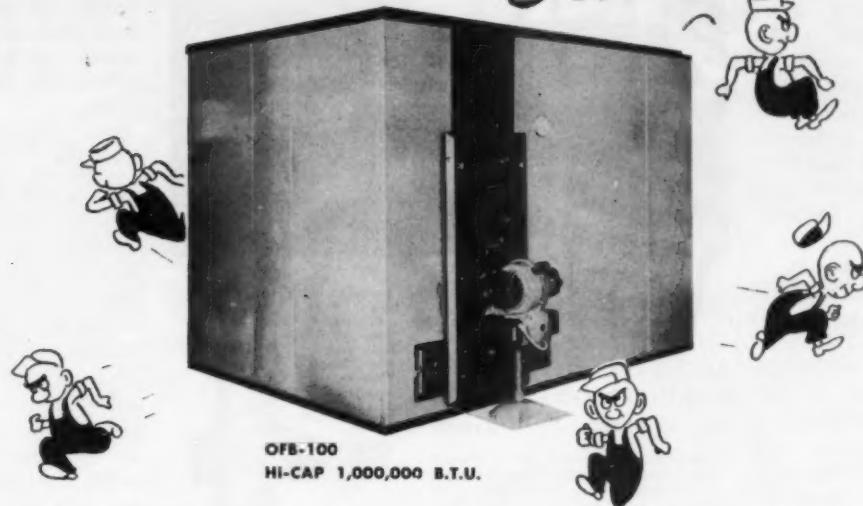
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NO ROOM FOR GREMLINS!



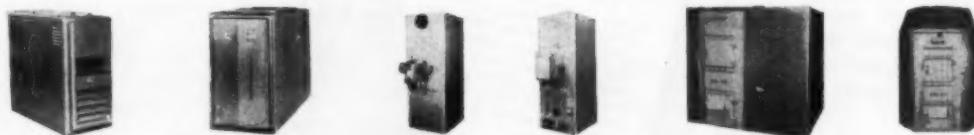
AN EXCLUSIVE INTERVIEW with "WILLY" the GREMLIN

THE FOLLOWING ARE A FEW EXCERPTS FROM A RARE INTERVIEW WITH "WILLIE" THE GREMLIN FOREMAN.



Interviewer — Where are you and your buddies going?
 Willie — Don't know, but we're clear in out of here.
 Q. Why?
 A. Can't have any fun around here.
 Q. Is that so?
 A. Yea! Dem guys have left nuthin for us to jam or rattle.
 Q. I thought you were clever that way.
 A. We are, but when they start weldin' em' inside and outside it ain't fair.
 Q. How about the heat exchanger?
 A. Me brudder Herman was in charge of dat — he left years ago when dey put in da new V-type accordian construction.

Q. Can't you crawl in someplace, hard to reach by servicemen?
 A. Dats a laff — There ain't no such place in a SYNCROMATIC.
 Q. There must be some furnace in the line that will let you enjoy life.
 A. Naw! Oil, gas or coal they're all alike.
 Q. Thats tough.
 A. Yea! Its gettin' tougher too as more and more Architects, Heating Engineers and Contractors are installing SYNCROMATIC's.
 Interviewer — Thank you Willie — any parting comment?
 Willie — Yea! Drop dead!



A WARM AIR FURNACE FOR EVERY NEED—OIL, GAS or COAL (From 60,000 to 1,000,000 B.T.U.s.)

WRITE OR CALL

Syncromatic Corporation

WATERTOWN WISCONSIN

the editor's notebook

Thumbing Through This Month's Artisan

... we find out something a lot of ordinary, garden variety taxpayers would like to know right now — how to make a 250 per cent initial profit on an investment, with more profits continuing to roll in every day for years afterwards. No, it's not financial "horseplay" — just a good insulation job. H. T. Gilkey and D. R. Bahnfleth tell how it's done in their article, *How Much Does Insulation Save in Air Conditioning a Home?* A sum of \$240 spent on installing mineral wool insulation in the walls and ceiling of a small residence reduced the initial cost of air conditioning equipment by \$840 and reduced operating expenses from \$3.90 to \$1.61 on design days (a saving of over 58 per cent). And these "savings" for the customer really are "profits" for the dealer — who can maintain and increase business income by offering higher quality, lower cost installations. (See this month's editorial.)

... and we see the wide variety of sheet metal work turned out by a dealer who sets his sights high — at completely satisfied customers. The article Sheet Metal Shop Produces "Just What the Customer Orders" describes, among other things, a 30 ft cafeteria counter, a sink and drainboard welded together by a special technique, an industrial roof ventilator and a milk cooler — all custom made.

. . . we also see that crawl space homes come in for their share of attention in the 15th article of Artisan's series on warm air perimeter heating. S. Konzo and H. T. Gilkey describe the progress made by

the editor's notebook

—(continued)

the industry in providing this type of home with such advantages as warm floor surfaces, comfortable rates of air motion, and low temperature differentials from floor to ceiling.

... we see also that dealers and contractors are turning out in large numbers for state association conventions. Reports on two conventions — "Advancement of the Industry" and One Way to Figure Overhead Costs — show why. At these meetings, Indiana and Minnesota dealers and contractors — at Indianapolis and Minneapolis, respectively — got important information that will help them make more profits (information on business procedures, calculating costs before bidding, merchandising programs, new markets, etc.) and will help them make better installations (information on factors affecting comfort, the variety of cooling equipment available etc.)

... we also find data that will help answer some important selling and merchandising questions such as "What area should I canvass in order to sell heating or cooling equipment, installations or services?" Artisan regularly condenses and presents information from the Bureau of Census' 1950 housing census, which tells, for example, how many nonfarm dwellings in certain areas are new or old, what types of heating these dwellings have, what types of fuel they use, etc.

... we find also the regular quota of news and departmental features to keep you posted on what goes on in this busy and expanding industry.



300,000 SQUARE FEET...

**DEVOTED TO THE PRODUCTION OF PREFABRICATED
FURNACE FITTINGS, GRILLES, HUMIDIFIERS, RAIN GOODS**

YOUR ASSURANCE OF QUALITY AND SERVICE

We're proud that under one roof, we can devote 300,000 square feet of floor area to providing better service for our customers. To you it can mean truckload discounts without large inventories, savings in time and money when figuring costs, savings in space, and, above all, a complete line of well-engineered registers, fittings, humidifiers and rain goods.

YOUR CHOICE OF GALVANIZED OR ALUMINUM

Char-Gale fittings are currently being produced in both galvanized and aluminum, in quantities to suit your needs.

YOUR PROOF OF CHAR-GALE FORESIGHT

First in the production of forced air prefabricated ducts.
First in the use of aluminum for ducts and fittings.
First in the packaging and cartoning of fittings.
First in the development of project packs (job for job).
First in the development of the 4-inch pipe system.
First to design the increased capacity 4½-inch system.

YOUR BEST SOURCE OF

- ★ Aluminum Fittings
- ★ Aluminum Pipe and Elbows
- ★ Aluminum Sheets
- ★ Galvanized Fittings
- ★ Galvanized Pipe and Elbows
- ★ Galvanized Sheets
- ★ Complete Small Pipe Systems; both Aluminum and Galvanized
- ★ Humidifiers
- ★ Rain Goods
- ★ Registers—Complete Line, both Perimeter and Conventional including Floor Diffusers

For Information and Catalogs, Contact Your Jobber or Write Direct to

CHAR-GALE MANUFACTURING CO.
ANOKA, MINNESOTA

the editor's notebook

(continued)

Survey Shows Home Builders Optimistic

SPEAKING at the 10th annual convention of the National Association of Home Builders, Emanuel M. Spiegel, president, reported on the results of a survey conducted by NAHB in an effort to appraise the construction prospects for the coming months. The survey covered 350 representative home builders, and replies were received from 273 builders in 39 states and the District of Columbia. Five questions were asked of the builders:

- 1) In what price range do you plan to build in 1954?
- 2) In what price range did you build in 1953?
- 3) How many housing units do you plan to build in 1954?
- 4) How many did you build in 1953?
- 5) What do you think of the 1954 home building outlook?

Of the 273 builders reporting, 159 said they planned to build more homes this year than they did in 1953, while 53 said they would produce the same volume, and 61 said they would erect fewer homes this year.

Replies to the price questions indicated a generally steady to slightly higher price trend for 1954. The survey showed that 60 builders intend to build in a higher price range this year than they did in 1953, and 71 plan to continue their 1953 price lines, while 42 will build lower priced homes than they did last year.

In their comments on the 1954 outlook, the majority of the builders were optimistic. A total of 92, or 33 per cent, said they had no reservations in predicting that this year would be as good as or better than last year.

MAN'S QUEST FOR DEPENDABLE HEAT

Primitive Man cherished fire as it provided him with heat and comfort. But despite his care, accidents sometimes extinguished the flame. Being unable to produce fire, he might be without it for months or even years.

It's no wonder then, that the man who found and brought back fire produced by lightning, or some other natural means, was hailed as a hero and often made chief of the tribe.

Man has come a long way since those early times in insuring his comfort. Yet, even today, dependability of heating equipment is vital.



YOU GET
DEPENDABLE
HEAT WITH

nu-Way

THE WORLD'S FINEST OIL BURNER

Insist on a heating plant
with an oil burner made by Nu-Way.
Write for full details.



THE
Nu-Way CORPORATION

ROCK ISLAND, ILLINOIS

Sold through jobbers and distributors
The adopted standard on leading furnaces and boilers
"Automatic Oil Heat Exclusively Since 1921"

the editor's notebook

(continued)

Another 139 said they were optimistic with some qualifications — principally that business would be good if the mortgage market continued to improve.

100,000 Central Cooling Installations In '54?

THE ESTIMATE made by American Artisan last spring (March 1953, Residential Cooling Equipment Available This Year) that about 50,000 central cooling installations would be made in 1953 was borne out by figures recently released by Cloud Wampler, president, Carrier Corp. Mr. Wampler stated that these installations showed a "remarkable" growth last year, since the 1953 figure totals more than three times the 15,000 installations made in 1952.

He forecast that 1954 central cooling installations will rise in number by at least 100 per cent, to a total of over 100,000 — and that in 1955 the figure will be over 200,000.

Urge Engineers To Help Solve Social Problems

THE PRESIDENT of Westinghouse Electric Corp. recently called on the nation's engineers to play a greater role in public life and to take the lead in "applying engineering principles to our social problems."

Addressing the annual dinner of the American Society of Mechanical Engineers, Gwilym A. Price said, "The engineer is not only the ideal man for this work, but also stands in an ideal position to perform it."

Wherever the nation's problems are physical and subject to technical solutions, they have been and can be surmounted, Mr. Price declared, adding, "Unhappily, however, many of our most

You don't need to be a mechanic to **OPERATE IT**

You don't need to be a bookkeeper to

FIGURE THE MONEY **IT MAKES**



LOCKFORMERS
aren't "cranky" or
"temperamental". You
don't lose shop time repairing
them or adjusting them.
Anybody can do a professional job
the first time. There's no problem
of spoiled material. They *keep on*
giving 100% satisfaction, year after year.

Lockformers make Pittsburghs and other locks
fifteen times as fast as hand methods. This
terrific savings in labor costs makes the purchase
price of any Lockformer insignificant by comparison.
Just about everybody in the sheet metal business already
knows all this—and, of course, just about everybody in
the sheet metal business already has one or more Lockformers.

So if you're going to work sheet metal, you'll need a Lockformer.
There won't be a better time than right now to place your order.



ONE MAN WITH A LOCKFORMER MAKES MORE PITTSBURGH LOCKS THAN SIXTEEN MEN WITH EIGHT BRAKES

Write for the
Lockformer
catalog

THE LOCKFORMER CO.

4615 West Roosevelt Road Chicago 50, Illinois

the editor's notebook

(continued)

dangerous problems are not physical and will not be solved by better research, high productivity, or any of the other industrial virtues. I refer to the social illnesses that afflict our age. How to cope with these is probably the most perplexing internal problem we face.

"You and other engineers hold part of the answer in your hands," he said. "You have successfully applied engineering principles to industry. Now our hope lies in part in the application of those principles to our social problems."

Steel Production Still at Capacity

CLARENCE B. RANDALL, chairman, and Joseph L. Block, president, Inland Steel Co., recently told stockholders that steel production was still at capacity, despite more competitive conditions. "We believe this will prove true for the entire first quarter," they said, "and while it is not possible to appraise accurately the longer range future, we confidently believe that 1954 will be another good year."

Older Homes Biggest Gas Market

SHELDON COLEMAN, president, Gas Appliance Manufacturers Association, predicts an even greater business volume for the gas industry in 1954 than in 1953. Reasons for this forecast, he said, include projected new construction, remodeling of older homes and rapid expansion of the nation's natural gas system.

"New homes," he explained, "provide an obvious source of business; however, it is significant that the great majority of sales in 1953



The industry's most advanced quality forced-air furnace

- ...designed to eliminate service problems
- ...designed to cut installation costs
- ...designed for high quality at competitive prices
- ...designed to make customers happy

And—who wouldn't be happy with the Royal Jet-Aire! It's quieter, safer, gives many extras in heating comfort. Available in 75,000, 85,000 and 105,000 BTU input capacities, the Royal Jet-Aire also comes in a counter-flow model of 85,000 BTU input capacity. Without a doubt, the TALL RED is today's greatest furnace value.

ROYAL JET INC.

ALHAMBRA, CALIFORNIA
Formerly Royal Heaters, Inc.

Manufacturers of a complete line of quality heating equipment.

the editor's notebook

(continued)

were to homes undergoing a complete or partial remodeling. The drive against obsolescence will provide the principal market for gas fired equipment in 1954. As for gas utility and pipe line construction, expenditures are being planned at the rate of over \$1 billion a year through 1956."

He also pointed to the rapid growth of the air conditioning industry, stating that this development would benefit manufacturers of gas central heating equipment because installation of the heating ductwork often provides a ready made system of cool air distribution for summer comfort.

Urban Building in South Up 8 Per Cent

VALUE of urban building in the South during the first 11 months of 1953 followed the national trend by advancing approximately 8 per cent over its 1952 counterpart, according to Brunswick A. Bagdon, Southern Regional Director of the U. S. Department of Labor's Bureau of Labor Statistics. Southern building permits for urban construction, including additions, alterations and repairs, as well as new residential and non-residential construction during the 11 month period of 1953, accounted for a total of \$2,290.9 million as compared with \$2,118.9 million for the same period in 1952.

Over \$1 Billion for Steel Expansion in '53

THE AMERICAN Iron and Steel Institute reports that iron and steel companies spent over \$1 billion to expand and improve their plants last year. An investment of approximately \$775 million will be made during 1954 according to estimates

Only Automatic Humidifier's

DRIP FEED GIVES CONTROLLED HUMIDITY

Built-in thermostat drip-feeds measured amounts of water to *sizzling* bot pan. Each drop vaporizes as it strikes pan. Gives home measured vaporization, preselected to meet the individual needs of each family.

Thermostat automatically shuts water off when heat goes down. This completely eliminates the old-fashioned method of reheating a pool of cold water in humidifier.

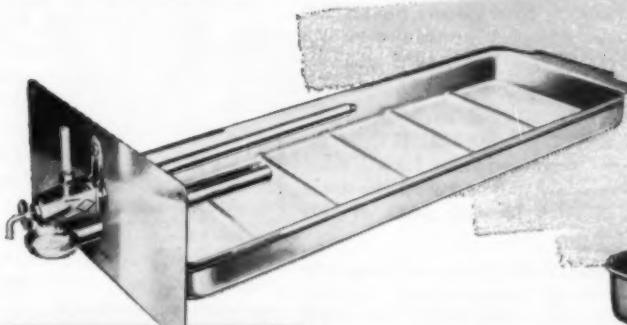
AUTOMATIC HUMIDIFIERS are noted for their greater efficiency, better performance, *lower cost*. Get facts on the complete **AUTOMATIC** line. Write for new free catalog, A-3.



THERMO-DRIP

For installation on straight side bonnet or plenum of any warm air furnace. Fully adjustable. Automatic drip-feed controls vaporization. No stagnant pool to reheat. Valves do not lime up. Outside screw adjuster. Stainless steel pans.

No. 555 VAPORITE



No. 500 VAPORITE

For installation on any straight side bonnet or plenum of any gravity or forced warm air furnace. Furnished with stainless steel vapor pans which heat quickly, evaporate water faster. Pan is easily suspended across plenum chamber. Thermostat assembly may be mounted low in plenum chamber with vapor pan mounted independently on top of combustion dome. Sensitive thermostat controls drip-feed.

Completely assembled for lowest cost installation. Cuts time and labor costs on every job. No parts to assemble. No pan leveling or tricky mounting. Just slip the preassembled VAPORITE through single opening cut low in plenum wall. Drip-feed controlled by sensitive thermostat puts right amount of moisture in the air. Low in first cost, low in installation cost.

No. 577 VAPORITE

Completely assembled for fast installation. Adjustable so that it can be mounted on sloping or straight bonnet furnaces. Merely a few turns of the pitch adjusting screw, tips the pan forward or back to level it with plenum. Positively quickest and easiest installation of humidifier that it is possible to make. No time or labor wasting adjustments. Just cut one hole in plenum wall and slip in the VAPORITE as it is shipped.



AUTOMATIC HUMIDIFIER CO., CEDAR FALLS, IOWA

the editor's notebook

(continued)

by the companies at the start of this year. This investment is not being made by a few large companies alone. Medium and small size companies are sharing in the effort to provide more steel capacity. Among the facilities which came into operation in 1953 were about 500 new coke ovens and over 400 rebuilt ovens; several new blast furnaces and steelmaking furnaces; equipment for rolling sheets, strip and tin plate; a new bar mill; annealing equipment; and many other facilities.

Training Films Are Listed

MOTION PICTURES designed to aid training departments in their educational programs are listed in several publications available from the Office of Technical Services, U. S. Department of Commerce, Washington 25. Among the subjects covered are: Training Research (Report PB 111116, \$1.00); Welding (Report PB 111037, 75 cents); and Materials Handling (Report PB 111026, 50 cents). Reports such as these are found listed regularly in the Bibliography of Technical Reports, published monthly by the Office of Technical Services, which sells for 50c a copy and \$5.00 a year.

Movie Outlines Aluminum Brazing Methods

A DEMONSTRATION and explanation of light metal brazing techniques is offered in a 22 minute, 16 mm. sound film entitled *New Horizons in Aluminum Brazing*. Methods explained in the film include torch brazing with a gas torch and furnace brazing where the furnace supplies the heat source. The film is available for group showings. Requests for prints



the Pioneer **Vitroliner** *prefabricated* **Chimney**

Sells on its "proven" 11-year record of quality and leadership! It is exactly what modern builders and architects desire for 1 and 2 story buildings:—

- **A FINISHED PREFABRICATED CHIMNEY, tailor-made at the factory for each individual building!**
- **A LIGHTWEIGHT CHIMNEY, that needs no EXTRA structural support! It is easy to handle and fits between ceiling joists. Saves VALUABLE FLOOR SPACE in the utility room.**
- **A WELL DESIGNED CHIMNEY, that architects admire for its APPEARANCE AND FLEXIBILITY. The chimney housing has a "new modern look" that harmonizes with today's modern-styled homes. The chimney location can be in any part of the house.**
- **A QUALITY-BUILT CHIMNEY that insures long life and safety! Built of heavy gauge steel, coated with acid-resisting porcelain completely covered with molded Fyrex non-combustible insulation.**
- **AN "ENGINEERED" CHIMNEY, that creates greater heating plant efficiency and a better draft than other designs or a comparable masonry chimney — also provides ATTIC VENTILATION.**
- **AN APPROVED CHIMNEY, that is proven successful. Listed by Underwriters Laboratories, Accepted by F.H.A. and approved by local building authorities.**

Write for circular today.

CONDENSATION
ENGINEERING CORPORATION
3511 W. POTOMAC AVE., CHICAGO 51, ILL.

the editor's notebook

(continued)

should be made on business letterheads to Motion Picture Section, Aluminum Co. of America, 854 Alcoa Bldg., Pittsburgh 19.

Steel Capacity at Highest Level

THE 1953 INCREASE of about 6.8 million tons in the steel capacity of the United States took place in 14 states, according to American Iron and Steel Institute. The capacity of the nation is now 124.3 million tons of ingots and steel for castings annually. This is the highest level ever achieved. Pennsylvania, Ohio, Indiana and Illinois are the four largest steel producers, in that order. Michigan recently became the fifth largest steel state.

Keeney Announces New Officers

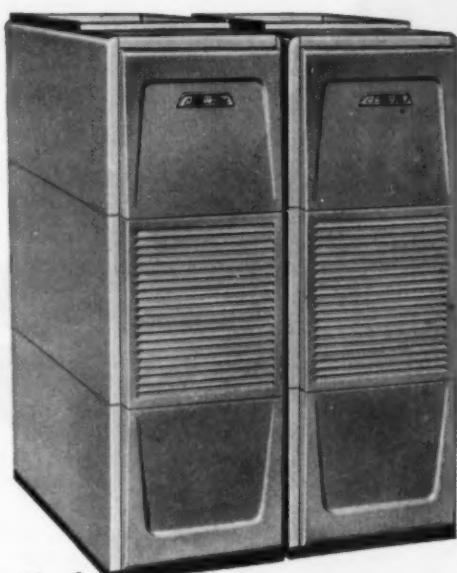
WITH THE creation of the office of chairman of the board, which Publisher Frank P. Keeney assumed last month, the Keeney Publishing Co., publisher of American Artisan and Heating, Piping & Air Conditioning, announced the election of Chas. E. Price as president and treasurer of the company. Mr. Price has been secretary, treasurer and general manager for a number of years.

Robert A. Jack, in charge of advertising in the central eastern territory for both magazines, became vice president of the company. Wallace J. Osborn, head of the eastern office of the company, continues as vice president. C. M. Burnam, Jr., editorial director, was elected secretary.

Each of these officers has been with the Keeney Publishing Co. continuously since its formation in 1933 and prior to that with the two magazines which came under the Keeney company's ownership at that time.

More Sales, Added Profits

with the bigger-than-ever Mueller Climatrol Cooling Line



New!

Type 224-906 Companion Units — For all-season air conditioning. The type 224 heating unit is oil-fired (convertible to gas) — with 80,000, 100,000, 125,000, and 150,000 Btu input. The Type 906 cooling unit is available in 2-hp and 3-hp sizes — and can be installed with any winter air conditioner. Has own blower. Each size of the heating unit may be interchanged with either of the cooling models, for real flexibility.

New Products make Mueller Climatrol the most complete line — broaden your market — provide you with more sales opportunities. **New Styling** by world-famous industrial designer, Brooks Stevens, adds eye-appeal that gives your prospects another reason to buy.

New, Smooth Finish in a new, handsome color — Mountain Spring Green. More pleasing appearance, easier to sell.

Now, Mueller Climatrol, the Big Name in Heating and Cooling gives you everything you need to keep out in front — for increased volume and profits.

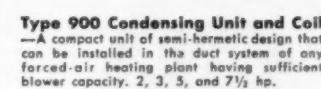
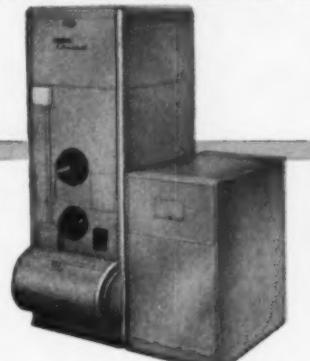
- A complete line to meet most any requirement — residential and commercial.
- Quality products built by specialists in home comfort!
- A well-known name with 97 years of leadership behind it!
- A consistent program of powerful national advertising!
- Hard-hitting dealer helps!

Write to see how you can put all this to work making money for you.

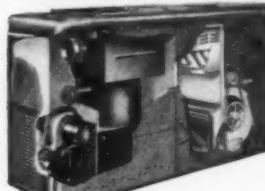


Mueller Climatrol

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Type 900 Condensing Unit and Coll
—A compact unit of semi-hermetic design that can be installed in the duct system of any forced-air heating plant having sufficient blower capacity. 2, 3, 5, and 7½ hp.



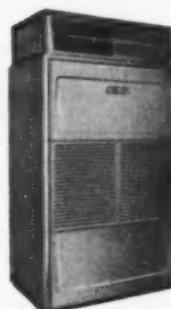
Type 916 Summer Air Conditioner
— For use with Types 116 and 216 winter air conditioners. By-pass damper arrangement provides utmost efficiency in any climate. 2 and 3 hp. Also available is the Type 901 Summer Air Conditioner for use with Type 103, gas-fired, and Type 202, oil-fired, winter air conditioners. 3, 5, and 7½ hp.



Type 115-905 Counterflow Summer and Winter Air Conditioner
— Heating and cooling for perimeter systems, with horizontal or attic furnaces, and other small-space applications. Furnace has adequate blower for both heating and cooling. Cooling unit contains complete enclosed refrigeration system. 2 and 3 hp.



Type 903 Self-Contained Cooling Unit
— Can be installed with any new winter air-conditioning system — or added to existing systems. Contains complete enclosed refrigeration system in one compact package. 2, 3, and 5 hp.



Type 904 Self-Contained Cooling Unit
— For installation in stores, restaurants, etc. — or with duct systems in homes with radiator or radiant heat. Complete refrigeration system with blower and filters. Can be installed with steam coil for heating. Available with discharge grille, or can be used with duct-work. 2, 3, 5, and 7½ hp.

B-162



Type 910 Recessed Summer Conditioner
— For cooling new and old homes, motels, apartments, office buildings, and homes with radiator heat. Installs under window between two standard studs. Air-cooled, requires no plumbing connections. ½-hp and 1-hp sizes.



Mor-Sun Forced Warm Air Furnaces offer a new standard of quality for better home heating. Thanks to Mor-Sun's design and operational superiority—at competitive prices—home heating contractors who display the Mor-Sun trade mark are doing more business with less effort and at a greater personal profit. If you don't have all the facts about Mor-Sun's tremendous potential, send us your name and address today. We'll send you all the details on this newest standard of home heating quality and comfort.

MOR-SUN FURNACE DIVISION

MORRISON STEEL PRODUCTS, INC.
609 Amherst Street, Buffalo 7, New York

Manufacturers of gas and oil operated forced warm air furnaces and air conditioners in styles and capacities for every heating and cooling requirement.



Complementing Mor-Sun Forced Warm Air Furnaces in size, appearance, performance and quality, new Mor-Sun Summer Air Conditioners provide efficient, economical cooling and air conditioning for both residential and light commercial installations.

Mor-Sun Air Conditioners can increase your sales potential 100%. Every furnace installation on your books is a prospect for air conditioning. Available in 2 and 3 ton capacities—air or water cooled—Mor-Sun Air Conditioners can be installed almost anywhere...as an ideal addition to a Mor-Sun Warm Air Furnace or as an individual cooling unit with any make heating system.

Identify yourself with this complete Mor-Sun line of home heating and air conditioning equipment backed by new intensified sales promotion and advertising activities. You'll be in one of the best positions to get your share of both new construction and home modernization business. Be sure you're getting the greatest return on your selling efforts...send us your name and address. Let us tell you about Mor-Sun...you'll find it pays!

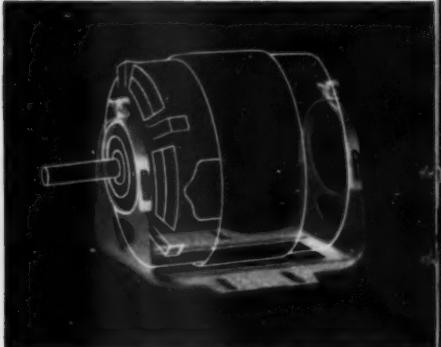


You get so much more with MOR-SUN



General Electric motors make
good room air conditioners
even better!

Here are six reasons why your product



1. VERSATILE all-angle unit bearing design and sealed-in lubrication system permit motor to be mounted in any position.

2. ATTRACTIVE APPEARANCE of motor improves the appearance of your product in applications where the motor will be visible.

3. MOUNTING CONVENIENCE helps solve product design problems. Use resilient cradle-base or end-ring mounting.

Put the selling advantage of G-E motor quality into your product

Use G-E shaded pole motors

G-E shaded pole motors help sell the products they power—because quiet, dependable operation and lifetime lubrication with unit bearing construction are big sales advantages.

HERE'S HOW G-E shaded pole motors pay off in savings in design, manufacture and shipping: all-angle operation permits more versatile design and easy installation; light weight cuts down the over-all weight of your product, makes handling easier and cuts shipping costs. And because it is compact and small, a G-E shaded pole motor fits current trends to smaller, better-looking room air conditioners.

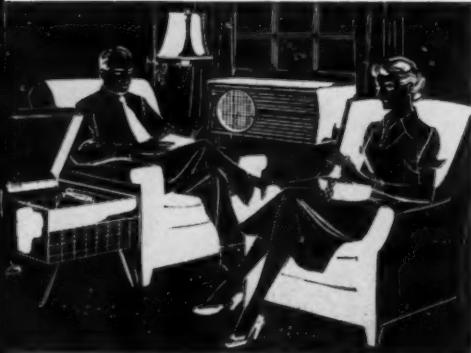
FROM DESIGNING, through production to fast selling, a G-E shaded pole motor is best for a far better product, whether you design and build furnaces, cooling fans, unit heaters, condensing coolers, exhaust fans, evaporative coolers or other air-moving devices.

FOR COMPLETE INFORMATION on available ratings contact your nearest General Electric Apparatus Sales Office today. General Electric Company, Schenectady 5, New York.

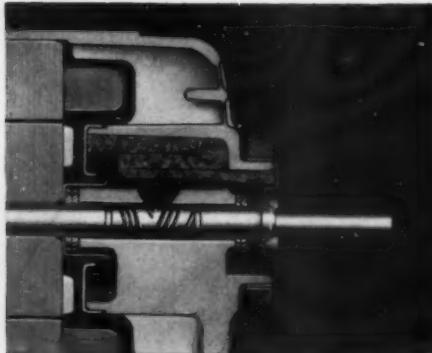
704-24

You can put your confidence in—
GENERAL  ELECTRIC

should use a G-E Shaded Pole Motor



4. **QUIET OPERATION** is a big selling feature. It is gained by accurate alignment and positive lubrication.



5. **LUBRICATED FOR LIFE** avoids inconvenience of adding lubricant . . . reduces maintenance to a minimum.



6. **"EQUIPPED WITH A G-E MOTOR"** helps sell your product by backing it up with G.E.'s reputation for quality motors.

are you
ready for
year 'round
Air
Conditioning?

FREE

Here's the air conditioning control application manual you'll need. It's loaded with easy-to-read information on the operation of automatic controls . . . how they're wired . . . how to install them. It's packed with diagrams and illustrations. There's nothing like it anywhere . . . it's a working tool you'll appreciate and use every day.

This manual is now on the press and will be available soon absolutely FREE. Be sure to put in your reservation for a copy . . . write today, on your letterhead, to **Penn Controls, Inc., Goshen, Indiana**, and ask for your free copy of "Residential Air Conditioning Control."

Residential
Air Conditioning Control

HOW

WHY

WHERE

YOUR biggest sales and profit opportunities are in year 'round, packaged air conditioning . . . residential heating *and* cooling! This is the NEW BOOM INDUSTRY.

But, automatic heating *and* cooling are NOT NEW TO PENN. For many years, Penn has been developing and building automatic controls for the leading manufacturers of heating *and* mechanical cooling equipment. There are other manufacturers of heating controls . . . and, still others who make refrigeration controls. Penn, however, builds BOTH heating *and* cooling controls.

That is the reason Penn is recognized as the ONE SOURCE for dependable, time-tested controls for year 'round air conditioning . . . the reason more and more manufacturers of packaged air conditioning equipment *bring their control problems to Penn for solution!*

You, too, can profit from Penn's experience and know-how. Be sure that the packaged air conditioning equipment you sell and install is fully equipped with Penn Controls. Standardize on Penn Controls *and Satisfied Customers. Penn Controls, Inc., Goshen, Indiana.* Export Division: 13 E. 40th Street, New York 16, N. Y., U.S.A. In Canada: Penn Controls Limited, Toronto, Ontario.

PENN



AUTOMATIC CONTROLS

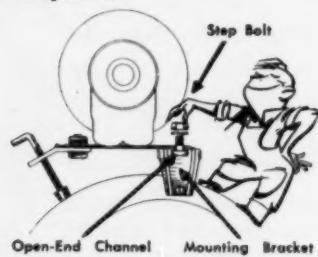
FOR HEATING, REFRIGERATION, AIR CONDITIONING, GAS APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES



Here's Proof of This Amazing Interest!



MOTOR MOUNT more than adequately supports motor insuring pulley alignment. Reduces bearing and pulley wear providing quieter, more reliable operation.



EASIER TO MOUNT MOTOR with new step bolts which slip quickly into open end U-Channel and are held securely by channel sides to permit hex nuts over motor base to be tightened with one hand.

Dura-maroon Housing and Silver Streak Wheel. Interchangeable with Viking Blowers now being installed.

"Easy Installation and Servicing...

that's what dealers like about these

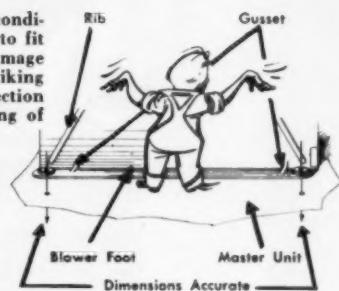
Improved Viking BLOWERS"



That's the field report of Mack MacKenzie, friendly Viking Representative of Naperville, Illinois

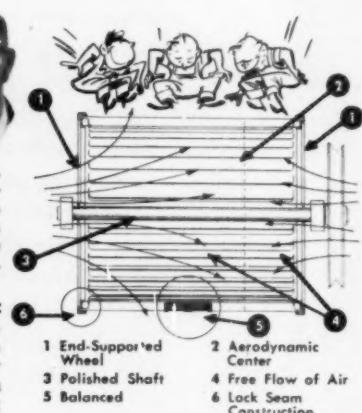


"When I install a furnace or air conditioner I expect the various parts to fit quickly into place and resist damage during our assembly operation. This new Viking Blower Assembly is the closest thing to perfection along these lines I've ever seen. No reborning of holes in the master unit with these accurate mounting holes. And the strength of the feet eliminate handling damage. I'm sure manufacturers know our problems and I hope they recognize this new Viking Blower as the solution." That's what Wes Solberg of Weichert Heating & Sheet Metal Works in Chicago, Illinois, said when he saw this new Viking Unit.



"Yes Sir, these new improvements in your Blower Wheel look to us like the last word in filling wholesaler, dealer and customer demands. Ought to produce the maximum air flow for its size and cost. It's definitely a strong wheel structurally. Together your improvements show a quieter, longer-lasting wheel unit. Adds many reasons for preference by dealers who are already partial to Viking Blower Packages and Assemblies". So reports Charley Bennett of Armstrong Heating Supply Co., in Chicago, Illinois.

Note to Furnace & Air Conditioning Designers: A request on your company stationery to Viking at the address listed below brings quick delivery of our Blower Assembly Workbook for specifying the blower you require for your unit. Ask for "Viking Blower Assembly Workbook".



Viking
Air Conditioning

DIVISION OF THE NATIONAL RADIATOR COMPANY
5601 Walworth Ave., Cleveland 2, Ohio



Viking Blower Packages



Viking Blower Assemblies



Viking Humidifiers

Other Viking Products
Dehumidifiers
Attic Fans
Window Fans

WAYNE

THE ORIGINAL

DIAL-O-METER



LOW PRESSURE
OIL BURNER

MODEL EL

CAPACITY 0.4 TO 1.5
GALLONS PER HOUR

CALIBRATED FOR FAST,
ACCURATE RATE SETTING

Dial The Rating With DIAL-O-METER!

A simplified, one-size low-pressure oil burner with standardized components to eliminate parts-service problems. Record high efficiency for low-cost operation. To change rating from 0.4 to 1.5 GPH. on the job, just set calibrated DIAL-O-METER, lock in position, and adjust air-handling parts according to specification sheet furnished with burner. No guessing -- no messy oil measuring. Fast and accurate. The quality low-pressure burner at a popular price. Rigid, cast aluminum body maintains lifetime alignment. No vibration. Quiet. Longer life. Less wear of moving parts.

SEE THIS REVOLUTIONARY
OIL BURNER
IN BOOTH
374
AT THE
SHOW...



WAYNE HOME EQUIPMENT CO., INC.
801 GLASGOW AVE.

FORT WAYNE 4, IND.

Write For
Catalog
Today!

Please Rush Data On: _____ Date _____
 DIAL-O-METER Low-Pressure OIL BURNER
 OIL-FIRED FURNACES Hi-Pressure BURNER
Name _____
Company _____
Address _____
City _____ State _____



More Than Ever .. OFFERS

With the advent of the three new Baseboard type DIFFUSAires which H & C proudly announces, the H & C line of diffusers for perimeter heating and cooling offers the installer the widest possible choice and the assurance of top-notch performance in every type class. In addition to those shown here, the line includes both Sidewall and Floor type DIFFUSAires which have gained wide-spread popularity by reason of their exceptional efficiency, economy and excellent appearance.

THE NEW No. 44 Series

- FOR CONTINUOUS TYPE INSTALLATION
(8' or more — in multiples
of 2' or 4' units)



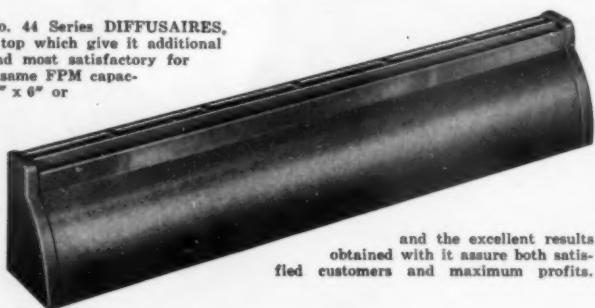
Thoroughly engineered for top performance in both heating and cooling, months of exhaustive testing definitely indicate it to be the finest continuous type Baseboard diffuser ever devised for perimeter installation. It is exceedingly low in resistance and provides a vertical pattern of air movement in both heating and cooling that is imperceptible to the

room occupants. Housewives love its streamlined appearance, the ease with which it may be painted to harmonize with its surroundings, and above all, the ease with which it may be disassembled for thorough cleaning by simply removing the end caps and snapping off the front. There are no small crevices or openings on the front to collect dust or dirt. Installers appreciate the time and money saved by its easy installation features, which combine with the low unit price to assure maximum profits or greater savings to the home owner.

THE NEW No. 452

HIGH CAPACITY 2-FOOT UNIT

Identical in construction to the No. 44 Series DIFFUSAires, except for the perforations in the top which give it additional capacity, this diffuser will be found most satisfactory for nearly all installations. It has the same FPM capacity as our sidewall diffuser size 10" x 6" or an eight foot length of baseboard diffuser, and the high vertical throw obtained with it, makes it ideal for cooling as well as heating. No cutting of the bottom panel is necessary since it is furnished with a 2 3/4" x 12" opening in the bottom panel, ready to install. Its low price, top quality, time-saving installation features



and the excellent results obtained with it assure both satisfied customers and maximum profits.

THE NEW No. 405

OUT-OF-WALL DIFFUSER



This fine new DIFFUSAIRE is extremely advantageous for installation in many types of old construction and may be used with excellent results in almost any installation, old or new. It provides the same air pattern as our popular No. 401 Sidewall DIFFUSAIRE, thoroughly blanketing the outside wall and window area. And because it has a very low degree of resistance, it does so at low velocity. It comes equipped with back panel, making the use of stackhead unnecessary — simply connect to 2 3/4" x 12" boot. Damper is equipped with volume adjusting screw for balancing. Base projection: 2 1/2". Height at back: 7".

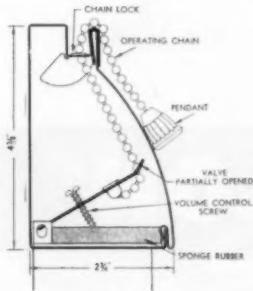
PRODUCT OF THE WORLD'S LARGEST and MOST PROGRESSIVE PRODUCERS OF REGISTERS and GRILLES

THE MOST COMPLETE LINE OF PERIMETER DIFFUSERS!



CONNECTOR STRIP

When the 4-foot sections have been installed side-by-side, this strip is simply snapped on — completely and effectively sealing the joint.



**Furnished K.D.
No Disassembly necessary.
No screw holes to line up. Precision
parts snap together without use of tools.**

Designed for installations of any length of 8 feet or more, in multiples of 4 feet, the H & C No. 44 DIFFUSAIRE is by far the easiest to install of all continuous type diffusers. It comes conveniently packaged — 2 four-foot lengths complete with end caps and connector strip — in each carton, knocked down and ready to install. No disassembly required. No screwholes to line up. Parts are simply snapped together without the use of tools — a definitely worthwhile time saver for the installer. Obviously, it may also be disassembled with equal ease for thorough cleaning — a factor greatly appreciated by home owners.

No. 44V DIFFUSER DAMPER

Available for use with the No. 44 Series and No. 452 Baseboard DIFFUSAIREs. Operates within the diffuser. Does not depend on springs for opening or closing. One damper serves both a $2\frac{1}{4}'' \times 12''$ or $2\frac{1}{4}'' \times 14''$ boot and thus simplifies stocking. Easy to install. Chain, chain-lock and ornamental knob are completely assembled to damper at the factory. Chain-lock clips to top of front panel.

Illustrated at the right is a 2-foot cutaway section of the No. 44 Series DIFFUSAIRE showing the damper installed. In this and the detailed drawing, note the sponge rubber gaskets to eliminate leakage and the adjusting screw for balancing the system at the diffuser face.



Patent Applied For



HART & COOLEY MANUFACTURING CO.
500 EAST EIGHTH ST., HOLLAND, MICH.
IN CANADA: HART & COOLEY MANUFACTURING CO., FORT ERIE, ONTARIO

small in actual size



BIG

in job-time savings

Ever stop to think what a sizable percentage of your time on the job is spent in "putting things together"? When you do, you'll agree there's a big opportunity to save by choosing fasteners of proved reliability.

You can avoid trouble by specifying *Parker-Kalon* whenever you order Sheet Metal Screws. Every screw in every box is guaranteed first quality. Also, every screw is now identified*, so that you can be sure you are getting genuine *Parker-Kalon* Screws, even when screws are removed from the box.

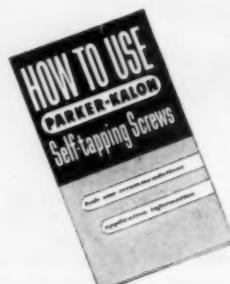
Write for samples. You'll see why top-rated sheet metal men everywhere say "If it's P-K, it's O.K." *Parker-Kalon* Division, General American Transportation Corporation, 200 Varick St., New York 14.



The
INDUSTRIAL
DISTRIBUTOR
steers your
Supply Dollars
to the best
values.

PARKER-KALON®

The Original **SELF-TAPPING SCREWS**



GET THIS GUIDE TO TROUBLE-FREE FASTENING

Tells you "where to use what" type of screw in all types of sheet metal, including stainless steel. Gives complete information on hole sizes and application data for all types of fastenings. Ask your P-K Distributor, or write *Parker-Kalon* for Form No. 480.

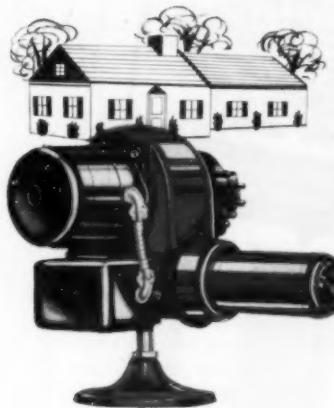
*This mark on every P-K Self-tapping Screw identifies it as genuine.

GET ANY JOB ...ANY SIZE

with Gilbarco's complete oil burner line

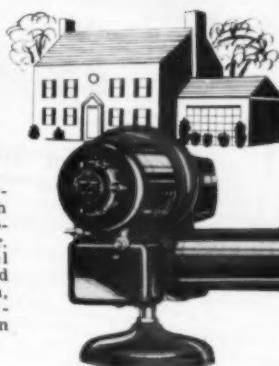
Gilbarco oil burners handle them all... large, average or small homes... commercial or industrial jobs. And Gilbarco's

exclusive ECONOMY CLUTCH helps save on heating bills for your customers... helps you make sales faster.



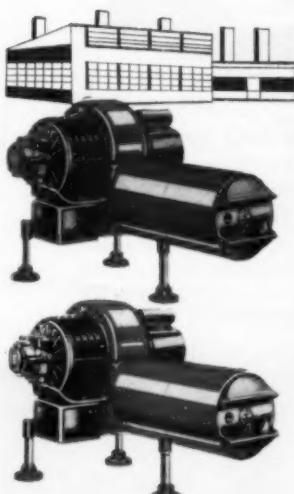
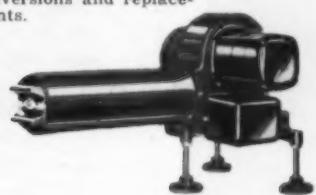
SELL THE VOLUME MARKET —

Get orders for average-size homes with Gilbarco's easy-to-sell GCS oil burner. A rugged model with the patented Economy Clutch, greatest sales-building feature in the industry!



SELL THE LARGE HOME MARKET —

Gilbarco's GC 1 and GC 2 models with the exclusive Economy Clutch are designed for really big home heating jobs. The ideal burners for large conversions and replacements.



SELL THE COMMERCIAL AND INDUSTRIAL MARKET —

Gilbarco's commercial oil burners with the patented Economy Clutch are available in 3 different sizes (2 shown here). Handle jobs with capacities up to 10,000 sq. ft. of steam and 16,000 sq. ft. of hot water.



SELL THE BUILDER'S MARKET —

Your answer to small home heating is Gilbarco's Model GBS. A famous name burner for the low price new home market.

Gilbarco

Gilbert & Barker Mfg. Co.
West Springfield, Mass.
Toronto, Canada

Sell units, too — Gilbarco offers a complete line of warm air conditioners, suspended furnaces and boiler-burner units.

Dramatic Announcement

... tells millions about Janitrol's amazing durability!

What this means to
Janitrol dealers



The new exclusive Janitrol Dura-tube heat exchanger is virtually indestructible! Such durability gives you a quality feature easily understood and appreciated by consumers alerted by major advertising.

Dura-tube is a combination of Janitrol's time-proved design and a process developed by the National Bureau of Standards during the past war. This new process is approved by A.G.A. for complete heat and corrosion resistance up to 1100° . . . 275° above the limit established for cast iron or steel exchangers!

BETTER THAN CAST IRON—BETTER THAN STEEL

Dura-tube construction has *all* of the advantages of cast iron or steel with *none* of the disadvantages peculiar to either metal.

Dura-tube construction plus numerous other features are available in the new 1954 DeLuxe series of Janitrol Gas-fired Conditioners. These new 1954 models will out-perform, and out-

last any other equipment built . . . here is the finest of a fine line of heating equipment.

Read the national consumer advertisement on the opposite page. It will high-light Janitrol's bigger, more powerful promotional program for 1954. It's the story you'll want to tell your prospects.

If you can sell quality . . . believe in it for your own continued success . . . get all the facts quickly on this sensational new 1954 Janitrol Conditioner. JANITROL Division, Surface Combustion Corporation, 400 Dublin Avenue, Columbus 16, Ohio.

MORE NEWS NEXT MONTH!

Janitrol will announce nationally the profit opportunities of the new summer cooling units . . . in 2, 3 and 5 ton sizes, watch for the Win-Sum Twins. They are your cue for greater "combination" profits.

®Janitrol
Automatic WINTER SUMMER Conditioning

Valuable Janitrol dealerships are available in several areas.
Write us about the locality you serve.

8 Facts About Chimneys

every heating contractor should know

As a heating supply or building material dealer you have long expressed the need for a modern packaged chimney for your builder customers. Builders say old fashioned brick chimneys are expensive and slow to build . . . and metal chimneys create home buyer sales resistance. Now, here is your answer. The Van-Packer Packaged Masonry Chimney combines the advantages of complete masonry construction with the economy of a packaged unit. The table below gives you the facts.



Here's the Van-Packer Brick-Panel Housing. It is made of fire-proof, corrosion-proof cement asbestos . . . deep embossed with brick texture . . . finished in brick-red with natural color mortar joints. All masonry Van-Packer is the only packaged chimney with the "buyer acceptance" of a brick housing.

PROPERTY	Brick Chimneys	Van-Packer Chimneys	Metal Chimneys
Built of time tested masonry materials	YES	YES	NO
Joints permanently sealed with acid-proof cement	NO	YES	NO
Attractive brick type housing helps sell house	YES	YES	NO
Rust-proof and corrosion- proof construction throughout	YES	YES	NO
Can be installed in 3 man hours or less without special skills	NO	YES	YES
Can be suspended from floor or ceiling	NO	YES	YES
FHA accepted, UL listed, approved by major codes and U.S. Army Engineers for gas, oil and coal	YES	YES	SOME
Available for immediate instal- lation from nation-wide jobber and dealer organization	NO	YES	NO



Van-Packer
PACKAGED MASONRY CHIMNEY
WITH BRICK-PANEL HOUSING

INTERESTED IN LEARNING HOW VAN-PACKER CHIMNEYS CAN
BUILD MORE PROFITS FOR YOU? WRITE FOR BULLETIN 11C-AP-23

Van-Packer Corporation
209 South LaSalle Street, Chicago 4, Ill.
Also manufactured and distributed in Canada by
C. A. McRobert and Son, Ltd., St. Laurent, Quebec.



Mr. BUILDER!

HERE'S THE KEY TO
QUICKER SALES and
BIGGER PROFITS



When you install Kaustine oil-fired, fully automatic heating in your homes, you make your *selling job easier*. You offer today's exacting buyers a top quality heating plant with an unsurpassed ability to deliver maximum heat per fuel dollar and an enviable record for trouble-free service.



Kaustine Engineering and Factory Assembly enable you to cut construction and installation costs. Kaustine Design saves valuable floor space as these compact units operate efficiently in a minimum area. Add to this Kaustine's competitive cost and you have a *greater profit margin*.



The Kaustine line offers forced air heating units delivering from 65,000 to 250,000 B. T. U.'s in models for every type of installation in any style or size of home.



Kaustine

FURNACE & TANK CORP.
PERRY, NEW YORK



The Kaustine "LOW BOY"

These fully automatic oil-fired Low Boys are designed for cellar installation. There are three factory assembled models delivering 85,000 B.T.U.'s, 95,000 B.T.U.'s and 110,000 B.T.U.'s. Larger units up to 250,000 B.T.U.'s are shipped knocked down.

WRITE FOR FULL INFORMATION TO DEPT. A-3

There is a Kaustine Furnace or Winter Air Conditioner for every type of home.

Galvanized Steel has Strength you don't get from other metals

...so both you and your customers
profit, when you install

MILCOR ^{*} Gutter and Conductor Pipe



A wide range of sizes and styles, with matching
accessories, to meet every requirement

Style "K" Gutter

Corrugated Round
Conductor Pipe



Mitre

Elbows

Square
Conductor Pipe

... says Bernard Sniros,
Sniros Brothers,
17 Olmstead Ave.,
Depew, New York

IT takes Galvanized Steel
to get the best results when installing rain-
carrying equipment.

For example, Milcor Gutter and Conductor Pipe have rigidity you don't get from other metals — rigidity you need for easy handling. Rigidity to withstand the banging of ladders.

You get a better all-around job, when you use Milcor Gutter and Conductor Pipe and matching accessories. The complete line is shown and described in Milcor Catalog No. 500. If you don't have a copy, write for it on your business letterhead.

Reg. U. S. Pat. Off.

INLAND STEEL PRODUCTS COMPANY

4023 WEST BURNHAM STREET • MILWAUKEE 1, WISCONSIN

BALTIMORE 5, MD., 5300 Pulaski Highway — BUFFALO 11, N. Y., 64 Rapin St. —
CHICAGO 9, ILL., 4301 S. Western Blvd. — CINCINNATI 25, OHIO, 3240 Spring Grove Ave.
— CLEVELAND 14, OHIO, 1541 E. 38th St. — DETROIT 2, MICH., 690 Amsterdam Ave.
— KANSAS CITY 41, MO., P. O. Box 918 — LOS ANGELES 58, CALIF., 4807 E. 49th St.
— NEW YORK 17, N. Y., 230 Park Ave. — ST. LOUIS 10, MO., 4215 Clayton Ave.

Four College Short Courses Announced



THREE OF THE FOUR announced courses are to be held at these colleges

HEATING DEALERS are going to college again this year to learn about the latest engineering trends in their industry. They will study heat loss and heat gain, equipment selection for residential and commercial installations, business management and cost control, efficient layout of air distribution systems, humidification and dehumidification, the heat pump, and fuel combustion efficiency.

Application problems will be worked out in the classroom under the direction of leading authorities from the warm air heating industry and personnel from college faculties.

Each of the courses will run for four days, with registration starting at 9:00 a.m. on the first day and classes commencing at 1:00 p.m. The morning of the first day will be devoted to a review of classroom problems, which will include the heating of a small home, the heating and cooling of a large residence, and the complete air conditioning of a one story commercial

building where the heat loss exceeds 250,000 Btu per hr. Courses are scheduled as follows:

Michigan State College — March 29, 30, 31, April 1. For details write Professor C. H. Pesterfield, Mechanical Engineering Dept., Michigan State College, East Lansing, Mich.

Penn State University — April 14, 15, 16, 17. For details write Professor T. A. Wright, Room 103 Mechanical Engineering Bldg., Penn State University, State College, Pa.

Syracuse University — April 19, 20, 21. (Three-day concentrated course; includes evening classes.) For details write Professor J. A. King, Mechanical Engineering Dept., Syracuse University, Syracuse, N. Y.

Iowa State College — April 21, 22, 23, 24. For details write Professor Marvin Gould, Engineering Extension Service, Iowa State College, Station A, Ames, Iowa.

Certificates of completion will be awarded at a luncheon on the last day of each course.

Farm Homes Good Heating Prospects

LAST JUNE, the Kansas Farmer, a magazine reaching approximately 114,000 Kansas farm owners, sent questionnaires to a sample 4 per cent of its readers to determine the type of household equipment being used in their homes and to obtain information on their future buying plans. Results of the survey, based on 2505 replies received, indicate that only about 40 per cent of the readers enjoy central heating. Thus, about 60 per cent, or more than 68,000 subscribers, are potential customers for this type of equipment. To the question, "What is the next major purchase you will make costing \$64 or more?" 2.9 per cent answered that they would purchase heating equipment, indicating that well over 3000 readers are immediate prospects for heating systems.

The 40 per cent figure for readers with central heating systems is the sum of the following groups: About 8 1/2 per cent (of 100 per cent) have forced warm air furnaces; almost 9 per cent use gravity warm air furnaces; close to 17 per cent have floor furnaces; about

WHAT'S HAPPENING —

(Continued from preceding page)

1½ per cent have steam or hot water systems. Approximately 4½ per cent use other systems or did not state the type of heating used.

Almost 28 per cent of the sample use gas for their central heating; some 7½ per cent use coal or wood; and about 4½ per cent burn oil. About one half of 1 per cent did not state the type of fuel used. Of the farm owners who have coal burning furnaces, almost 11 per cent use stokers.

Apprentices Win Prizes

A NUMBER OF cash awards will be given to winning contestants in the sheet metal apprenticeship contest, ending March 15, conducted by the National Joint Apprenticeship Committee under the sponsorship of the Sheet Metal Contractors' National Association and the Sheet Metal Workers' International Association.

Entries were placed by the contestants with their local apprenticeship committees, which selected the best fitting submitted and sent it with a drawing of the layout to the secretary of the National Joint Apprenticeship Committee for entry in the national contest. In addition to cash awards, each winner receives a medal and a certificate and each local winner receives a certificate of recognition.

A plaque will be awarded to the joint apprenticeship committee having made the most progress in the promotion of an apprenticeship program during the year ending December 31, 1953. The award will be presented by the National Joint Sheet Metal Workers' Apprenticeship Committee at SMCNA's annual convention, to be held in Pittsburgh next May.

New Alloys Being Developed

E. J. HANLEY, president, Allegheny Ludlum Steel Corp., reported recently on a number of new alloys the company is developing. He indicated that a new grade of stainless steel is under development, suitable for structural and sheet applications, that does not depend upon cold rolling to develop its ultimate tensile strength. He predicted that an alloy of this type would find widespread uses in industry. He also discussed the possibility of wider use of stainless steel in building and construction, pointing out that the superior strength and other advantages of stainless steel could offset the price differential on many building projects.

'53 Highest for Construction Spending

AN ALL-TIME HIGH dollar volume record was established in 1953, with \$17,443,463,000 in construction contract awards, according to F. W. Dodge Corp. report totals. This total was 4 per cent higher than the previous all-time mark set in the preceding year for the 37 states east of the Rockies. The large volume of contracts let in the second half of last year indicates that the amounts

of current construction activity and work to be put in place during the coming months are very high, according to the report.

One of the categories showing a big gain over 1952 was heavy engineering (public and private works and utilities) which was up 17 per cent. Non-residential awards were up 4 per cent, and residential, although down a moderate 3 per cent, contributed heavily towards making 1953 a highly satisfactory construction year.

Individual 1953 totals were residential, \$6,479,143,000; non-residential, \$6,955,866,000; and heavy engineering, \$4,008,454,000.

Demand for Steel Continues High

THE STEEL INDUSTRY made over 112 million tons of steel in 1953, according to a statement issued by Max D. Howell, executive vice president, American Iron and Steel Institute. This was the biggest production ever made in any country during a calendar year.

Mr. Howell explained that the industry is no longer operating at or above its full capacity; however, he said, the output in tons has been high, and there is no indication of a substantial setback in the near future. Because of the growth of the industry, he pointed out, nearly as much steel was made in September 1953 at 92.4 per cent of capacity as in September 1952, when the average was 102 per cent of capacity. As much steel could have been made at 88 per cent in 1953 as at 100 per cent in 1950.

He said that the industry has spent well over \$5 billion for new equipment and construction during the postwar years, and is spending hundreds of millions of dollars to develop new iron ore reserves in this country and in Canada and other parts of the world.

The industry's employment and estimated payroll rose to record high levels in 1953, with the payroll exceeding \$3 billion for the first time in history.

Air Conditioning Sells More Homes

WM. H. WISE, director of sales, Bryant Heater Div., Affiliated Gas Equipment, Inc., recently pointed out that new profits are "in the air" this year for builders who capitalize upon a growing public demand for complete year 'round air conditioning. "Year 'round air conditioning offers builders the first really new home sales attraction placed at their disposal in many years," he said. "Summer air conditioning, when added to winter air conditioning, provides the home with the most modern and appealing feature known to the building industry today," he stated.

Mr. Wise pointed out that during 1954 an estimated one million new homes will be constructed in the United States, of which possibly 75,000 would be equipped, when sold, for year 'round air conditioning. "In addition to this," he said, "many thousands of homes will be equipped with forced air winter conditioning units to which summer conditioning units may be added at a later date."

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SH 22G — 110,000
SH 24G — 140,000
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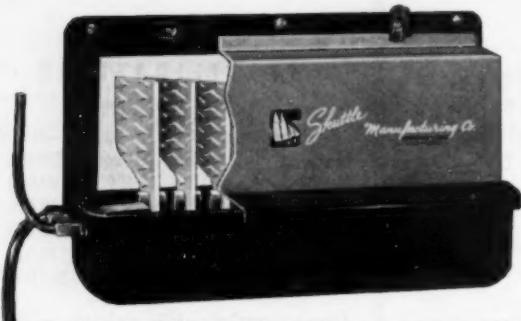
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New, Skuttle Model 450 for very compact warm air furnaces

Where space doesn't permit the use of a series 600 Humidifier, Model 450 does an excellent job. It can be used if there is 3" or more space between furnace and casing—in counterflow, low highboy, highboy, floor and other type furnaces as well as space heaters. High evaporation. Patented Vapoglas plates. Leak and corrosion proof glass float. Nickel and chrome plated brass valve parts. Aluminum plate rack. Evaporating pan is double coated acid and alkali resisting porcelain enamel on steel. Both regular and electronic corrosion are defeated by this type construction.

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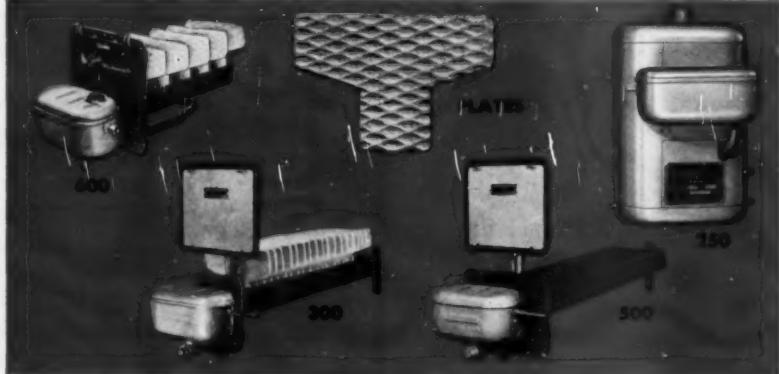
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14" x 4"
14" x 5"
14" x 6"
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Arnold Kruckman's
Washington Letter

Argue for "Bid-Peddling" Bill

THE SENATE and the House judiciary committees favor the Federal Construction Contract Act. In the Senate it is known as S-848, and in the House as HR-1825. The bills are identical. They have been before the Congress for several terms. The House bill is now on the calendar, which means that it may be called up when the rules committee acts. Bills that have been reported out by the committees that have considered them may come before the House only when the rules committee has given a rule, or a third of the members of the House have signed a demand that the bill shall come before the House for consideration, without the rule.

The act in question is intended to prevent bid-peddling and bid-shopping on federal contracts. It provides that no executive agency, acting either on its own behalf or on behalf of any other agency or corporation, shall award or enter into a construction contract upon a cost-plus-a-fixed-fee basis unless it shall be provided in such contract that all mechanical specialty work involved in the performance thereof shall be done by independent mechanical specialty subcontractors or by a contractor qualified to perform such mechanical specialty work and that, before any mechanical specialty work is commenced, the name of each of the independent mechanical specialty subcontractors or the qualified contractor who will perform any such work shall be submitted by the contractor to the procuring executive agency for approval. The law would not prevent a cost-plus-a-fixed-fee construction contractor from himself performing any kind of mechanical specialty work, provided he is a qualified mechanical specialty contractor.

What the Law Covers

The law does not apply to contracts where the aggregate amounts to more than \$25,000 or where undue delay would result. Contracts involving a lump sum award must contain the names of the subcontractors who will perform non-mechanical work and must show the cost of the work to the mechanical specialty work contractor. The law is written to protect the contractor who is able competently and legitimately to do the mechanical

specialty work, and to protect the mechanical specialty work contractor from those contractors, and others, who might misuse the opportunities which should go to the mechanical specialty contractor.

It is interesting to note that the term "construction contract" is defined to mean a contract for the erection, repair, moving, remodeling, modification, or alteration of any public building or public improvement, and the erection, repair, moving, remodeling, modification or alteration of any building or structure upon real estate intended for shelter, protection, comfort, convenience, or for production or processing, including (without being limited to) bridges, tunnels, dams, foundations, piers, abutments, viaducts, aqueducts, reservoirs, water supply projects, water control projects, water power development projects, hydro-electric development projects, disposal projects, transmission lines, locks, docks, jetties and breakwaters. The term "mechanical specialty work" in connection with a construction contract means all heating, piping, air conditioning, refrigerating, ventilating, plumbing and electrical work, including (but not being limited to) the furnishing and installation of materials, equipment and fixtures. And the term "contractor qualified to perform mechanical specialty work" means a contractor who himself customarily performs mechanical specialty work and who has and maintains a supervisory, administrative and technical staff which has proven on previous construction work to be competent to supervise, control, and direct the kind of mechanical specialty work involved. The term "contractor" means a person who is a prime contractor with an executive agency, acting either on its behalf or on behalf of any other agency or corporation, for the performance of a construction contract. The term "person" means an individual, corporation, partnership, association or any other organized group. "Subcontractor" is defined as a person who undertakes as an independent mechanical specialty subcontractor to do mechanical specialty work provided under the terms of the act.

The situation at the present is that the author of the bill, Representative Edgar A. Jonas, Republican of Il-



Washington Letter

linois, has asked the chairman of the rules committee, Representative Leo E. Allen, Republican of Illinois, for the rule to get the bill on the floor sometime in March or April. But as a matter of practical politics no one knows when such a rule will be available. Three or four men besides Representative Allen control the rules committee. The most powerful are Representatives Charles A. Halleck of Indiana, Republican, who dominates the House policy group, and Clarence J. Brown of Ohio, another Republican, whose word almost controls what happens in the House rules committee. The Senate rules committee is headed by Senator William E. Jenner of Indiana, with Senator Frank Carlson of Kansas second in command. Of course, Senator Knowland of California not only is the powerful floor leader but also the dominant figure in the policy group of the Senate. Likewise, Senators Knowland, Halleck and Carlson are the powerful figures in the policy group that meets several times each week in the White House. The fate of bills in the House and in the Senate is determined jointly in the White House and by the Senate and House policy leaders on Capitol Hill.

Act Faces Opposition

At this time no one knows what will happen to the Federal Construction Contract Act. It has powerful opposition from the Associated General Contractors, from the Defense Department, from the Office of Defense Mobilization, from the General Services Administration, and from other federal government as well as private civilian agencies and corporations and organizations. No one knows, under present circumstances in Washington, what may happen to any particular piece of legislation. Each day, almost each hour, new aspects and new ideas develop. Generally speaking, it would seem that it will take powerful political hauling and pulling to overcome the opposition. If it were merely a matter of letters, telegrams, telephone calls, and the usual barrage that is turned loose to put over some legislation there should be no question about the Federal Construction Contract Act. Representative Jonas, Senator Langer and other members of the Senate and House have had thousands of communications urging the passage of the act. If the present effort by Representative Jonas to get a rule fails, it would seem to be wise to adopt the techniques and mechanics that are so successfully used by the great labor organizations. They send to Washington trained and thoroughly informed groups of men. They come prepared to remain during the high-point of a pressure period until the job is done. They

are organized in a highly efficient manner. They are flying wedges, in small groups, who go to see the members of the Senate and the House, and they sell their ideas by visiting, by telephoning and by maintaining a constant pressure upon those who are known to be undecided. They never waste their time on those who have made up their minds in favor of their cause, or who are known to be absolutely opposed to whatever it is they want.

Senator Reports Testimony

Representative William E. Miller of New York, on behalf of the Committee on the Judiciary, wrote Report No. 892, a discussion of the whole subject. He cites the various bills that were introduced and analyzes the present bill. Senator William Langer of North Dakota, on behalf of the Senate Committee on the Judiciary, wrote Report No. 448. He recorded that supporters of the bill include Senator John J. Sparkman of Alabama; and representatives of the Heating, Piping and Air Conditioning Contractors National Association; the Heating, Piping and Air Conditioning Contractors' Boston Association; the Sheet Metal Contractors National Association; the National Electrical Contractors Association; the National Association of Plumbing Contractors; and others.

Against the bill appeared John C. Hayes and Earl J. Wheeler, Associated General Contractors of America, and representatives of the National Constructors Association as well as the Department of Defense, Office of Defense Mobilization and the General Services Administration.

Senator Langer says: "With respect to lump-sum contracts, witnesses generally agreed that the practice of bid-shopping or bid-peddling is an unfair trade practice that plagues the construction industry and is detrimental to the best interests of the owner which, in the case of federal construction, is the government. (Bid-shopping is the continuation of negotiations between the general contractor and the subcontractor, after the former has been awarded the contract on the basis of a bid given him by the latter and has a monopoly on the particular construction involved. After the award the bargaining position of the general contractor who already has sub-bids in hand and the subcontractor are not equal and the subcontractor is at a decided disadvantage). The code of ethics of the general contractors' association, and the handbook of the American Institute of Architects contain strong admonitions against this practice, and it was agreed that the majority of contractors and subcon-

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tractors do not desire to indulge in this unfair method of competition."

Senator Langer continues, "The testimony indicated that this practice still exists on some government construction projects. This obviously will make it increasingly difficult for both the ethical general contractor and the ethical subcontractor to compete against those members of the industry who engage in bid-shopping. This evil restricts the number of qualified subcontractors who are willing to participate in government construction and makes those who do participate put in their sub-bids at the last minute (and sometimes at an artificially increased figure) to the distress of the general contractors. A further result is that prime contractors are forced, in many cases, to submit their general bids to the government without any clear idea of what their principal subcontract costs (frequently 50 per cent of the total cost) will be."

Would Benefit Government and Contractor

The Senator explains in his report that the proposed legislation will give to the government the benefit of a widened field of subcontractors willing to submit sub-bids in connection with federal construction contracts. It will eliminate the chaotic conditions described by general contractors resulting from the last-minute submission

of sub-bids which exist under present procedures, and will afford the prime contractor the benefit, and the government the economy, resulting from the prime contractor having his low, firm mechanical sub-bids in advance of submitting the general bid. It will further eliminate the present conditions under which the ethical general contractor who refuses to engage in bid-shopping is at a competitive disadvantage with his competitors who do operate in this manner.

According to Senator Langer, testimony was presented of legislative efforts in a number of states — including New York, New Jersey, Delaware, Arkansas and North Carolina — to require mandatory separation of construction contracts into separate electrical, plumbing, heating, and general contracts and the separate bidding procedures provided by the Massachusetts statutes. He says that the Senate and the House committees believe the procedures prescribed by the proposed legislation will be equally effective to procure construction services economically and will be more elastic and retain for the government all benefits of centralized control and responsibility of one prime contractor and will not involve the administrative difficulties inherent in the state legislation. "The committee is advised," he says "that the statutes of California and Idaho require prime contractors to list their mechanical specialty contractors in their general bids. The committee believes the bill is appropriate to correct the defects in conditions, and is necessary to assure increased efficiency and greater eco-

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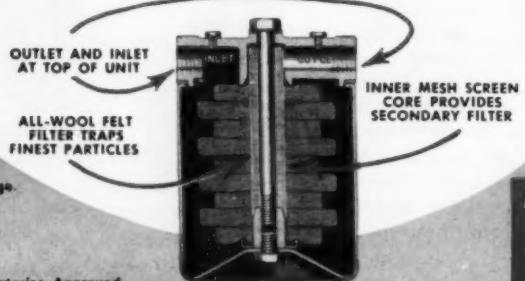
Best FOR CUSTOMERS

General FUEL OIL FILTERS



MASTER MODEL
2A-700

Veteran oil burner servicemen call General Fuel Oil Filters "the best money can buy." Two-fold, positive filtering removes the finest particles, improves operation of oil-fired furnaces, water heaters, space heaters. Service "call-backs" are eliminated, too, since the General 1A-25 and 2A-700 allow only clean oils to pass—greatly reducing possibilities of clogged burner nozzles.



Remember — Plugged fuel cost heating dollars! CLEAN RIGHT Soot Remover removes a $\frac{1}{2}$ " layer of soot in 2-5 minutes... safely and thoroughly. Made for General Filters, Inc.

GENERAL FILTERS INCORPORATED

GENERAL FUEL OIL FILTERS

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Canadian Factory Branch: Canadian General Filters, Ltd., 2679 Danforth Avenue, Toronto 13, Ontario



The answer to most of your questions about stainless steels are right at your finger tips, when you use Crucible's unique new Stainless Steel Selector.

Want to know the machinability characteristics of a stainless grade? Resistance to corrosion or scaling? Physical or mechanical properties? You can get the answers to these and other questions simply by setting the arrow on the Selector slide at the proper window. It's just as quick and easy as that.

And almost as fast as you get the answer, you can get the steel you need. For many of the REZISTAL stainless steels shown on the Selector are carried in stock in Crucible warehouses conveniently located throughout the country.

To get your free copy just fill in and mail the coupon. Better do it now.

HOW THE SELECTOR WORKS:

Start with the problem. For example, resistance to corrosion in contact with copper sulfate. Just set the slide at the proper index number shown on the Selector (in this case on the back), and you have the answer in a second — grades 302 and 316 are fully resistant to this form of attack.

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CRUCIBLE

54 years of *Fine* steelmaking

first name in special purpose steels

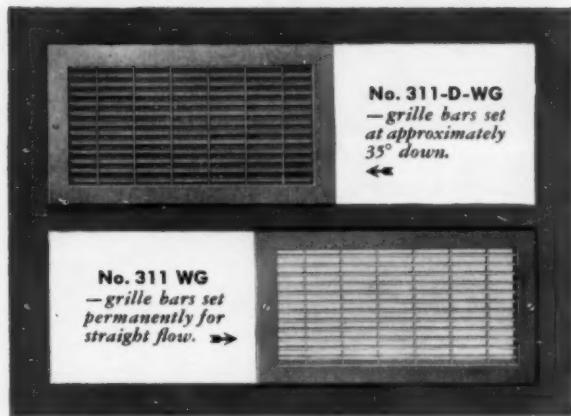
STAINLESS STEELS

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.
REX HIGH SPEED • TOOL • REZISTAL STAINLESS • MAX-EL • ALLOY • SPECIAL PURPOSE STEELS

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WALL GRILLES

for Commercial Installations



1. Vertical or horizontal bars strengthened by interlocking cross bars; no vibration.
2. Tamper-proof. Changes in air distribution cannot be made by unauthorized persons.
3. Mesh (3/8 x 1 1/16) filters 78% of free area yet darkens the duct and reduces highlights from back of the grille.
4. 14 gauge steel solid bars 1/2" deep—strong enough to be "kick-proof"—a must for schools.
5. All bars made from round edge stock. No sharp edges. (A must for schools.)
6. The only grille for taking abuse in school gyms and hospital psychopathic wards.
7. Made in several large and small sizes.



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WASHINGTON LETTER —

nomy in connection with government construction contracts, as well as to eliminate and reduce the adverse effects on the contracting industry of the unfair trade practices of bid-shopping and bid-peddling. The committee is not in accord with the views of the Department of the Army and the General Accounting Office that the bill places an added administrative burden on government agencies and is not in accord with the view of the General Services Administration that the bill is unduly complicated."

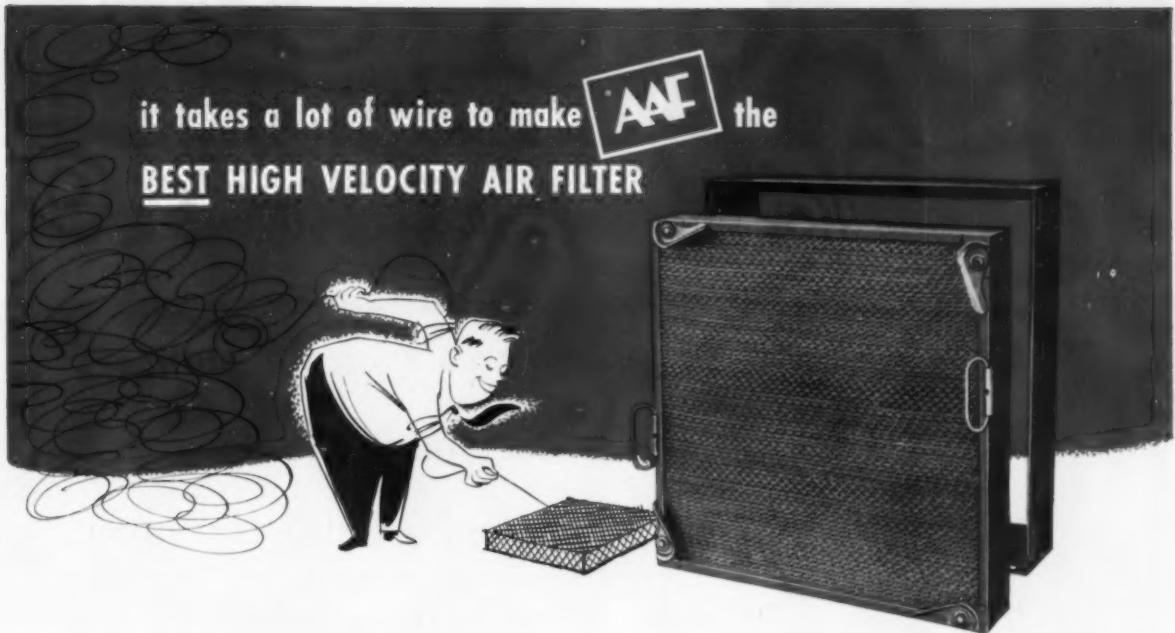
Malpractices Described

Executive Secretary James G. Morris of the Heating, Piping and Air Conditioning Contractors' Boston Association, and a member of the Massachusetts bar, told the Senate and House judiciary committees: "It has been admitted that many general contractors holding a contract to perform construction work for the government on cost-plus-a-fixed-fee basis have started, equipped and staffed a mechanical specialty department at the expense of the government. This is not difficult to imagine, for under this type of contract, the government pays all the bills. It has also been shown that, in some instances, contractors have set up dummy concerns in order to accomplish the same result.

"There are many general contractors who have for years maintained and operated their own mechanical specialty divisions. Of course, in the future some general contractors will undoubtedly integrate building operations and set up qualified mechanical specialty divisions. With these groups we have no complaint, for they are fully qualified and the government suffers no loss because of their operation. This fact has been given full consideration in drafting the bill, for the section clearly specifies that such contractors shall be deemed qualified.

"But when a contractor sets up, equips and starts operating a mechanical specialty division for which the government pays the bills, that is an entirely different matter. With an ample supply of experienced, fully qualified mechanical specialty contractors available, each of whom possesses the organization, equipment and trained personnel to perform the work in a prompt manner, why should the government be forced to finance a novel experiment on the part of the contractor?"

Mr. Morris, continuing to testify, said: "I have listened to the opponents' claims that federal construction would be hampered because of the fact that the sole responsibility of the contractor for the full coordination of the job would be disturbed. As a matter of fact, once the subcontractors and their prices are definitely determined, the work proceeds in exactly the same manner as it does today. There is no provision calling for the separation of contracts, and there is absolutely nothing in the bill which disturbs the present form of coordination in any way."



To be exact,
 there's **$4\frac{1}{2}$ MILES** of wire
 in each 20" x 20" x 2" HV UNIT!

4 1/2 miles of wire! That's the "inside" story of the HV unit's high cleaning efficiency in a nutshell. More wire means more viscous covered surfaces to catch and hold dust.

What's more, exclusive pyramid pocket design of the woven wire media gives the HV filter uniformly high cleaning efficiency at high or low air velocity—prevents "unloading" of collected dust. Its high capacity saves you both space and

dollars, too. Two HV's will do the job of three standard unit filters in $\frac{1}{3}$ less space. Fast installation with easily assembled holding frames makes for further economy.

AAF HV filters, in standard sizes, are stocked at strategic locations for prompt delivery. For complete product information, call your local American Air Filter representative or write us direct for Bulletin No. 203.



American Air Filter
 COMPANY, INC.

355 Central Avenue, Louisville 8, Kentucky

American Air Filter of Canada, Ltd., Montreal, P. Q.

Is Blend-Air a HIT?

Coleman's heating-cooling system



Coleman now guarantees heating comfort with \$1,000 Bond. Summer cooling, added any time, gives year-round Blend-Air more selling plus than any other system today

Blend-Air benefits



have home owners talking

"FAR ABOVE OUR EXPECTATIONS" WOODLAND, CALIF.



"We are very much pleased with our Coleman furnace. Our home could not be more comfortably heated."

Robert Gasson

"IT'S BEEN GOOD-BYE TO COLDS AND SICKNESS" MOLALLA, OREGON

"The same even temperature throughout the house, day and night, upstairs and down, and so economical to operate."

Mrs. Irvin Sharp

"STILL DOING A WONDERFUL JOB" FRESNO, CALIF.



"Blend-Air has passed the test both winter and summer with flying colors."

C. R. Rathbone

"PERFECT SATISFACTION IN EVERY RESPECT" OAK LAWN, ILL.

"Our fuel bill was considerably lower than any previous year when we were using another furnace. The Blend-Air system gives us a very even distribution of heat throughout the entire house."

Mrs. Robert Greco

"NO SMUT, DUST OR FUMES" KERRVILLE, TEXAS



"The operating cost has been such a normal amount!"

B. N. Kuhlmann

"INSTANTLY AND COMFORTABLY WARM" YORK HAVEN, PA.

"My Coleman gas-fired Blend-Air furnace you installed several years ago has been a source of great satisfaction to me. My home has been constantly and comfortably warm... no service troubles."

Minnie E. Weigle

"A NEAT JOB FOR AN OLD HOUSE" CHICAGO, ILL.



"... and it took him only 2 days to install it."

Mrs. O. Kere

"HAVE JUST BEGUN TO LIVE" BRYAN, OHIO



"... doing an exceptionally fine job for our home."

George LaFlam

Home owners shout "YES!"

pleases home owners all over the U. S.



No other system offers so much benefit, so much owner satisfaction.

Notice the genuine enthusiasm in the testimonials on the opposite page. They're full of benefit, full of the healthful comfort and low-cost, efficient operation Blend-Air promises users. It's the only system offering:

- ✓ **\$1,000 Comfort Bond** to guarantee heating comfort.
- ✓ **Cooling Added** whenever occupant is ready—for only a few dollars a month.

Comfort costs so little with

Equipment AGA approved
or listed with
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Coleman

Blend-Air®

✓ **Healthful Warmth** only the Magic Blenders can offer. Cooler summers with twice the moisture removed from sticky, wet air—than with most systems.

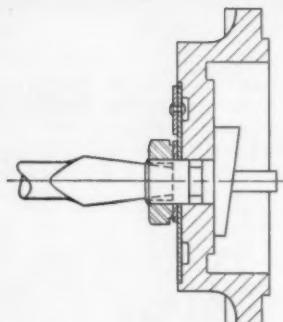
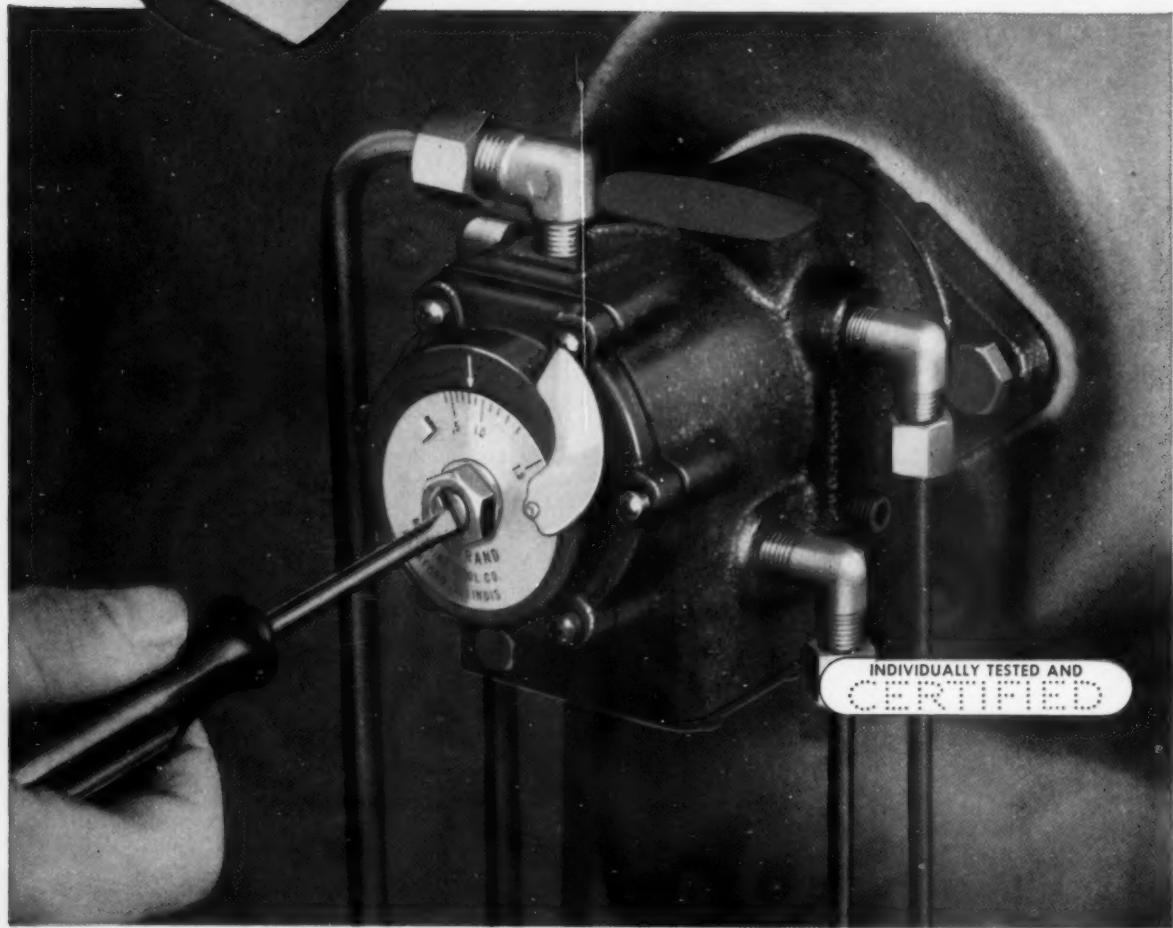
✓ **Automatic Thermostat Control** for over-all home temperature regulation plus individual room temperature control.

Write us and we'll give you all the facts on this year-round comfort system that has so many attractions for home owners, so many selling and installation features for you. The Coleman Company, Inc., Dept. 751-AA, Wichita 1, Kansas.

OIL
GAS
LP-GAS



NOW!



FIRST AIR-OIL FUEL UNIT WITH CALIBRATED OIL ADJUSTMENT!

There's no guesswork to it. Just loosen the locknut, insert a screwdriver . . . turn the adjusting screw to the capacity you need. All adjustments are easily made while unit is operating. The range . . . (4 to 1.5 gph).

SUNDSTRAND'S Air-Oil Fuel Unit has built-in adjustability...

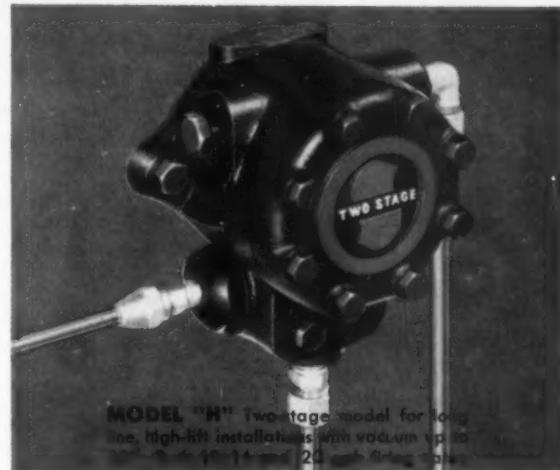
Yes! Now you can have Sundstrand's revolutionary new Air-Oil Fuel Unit with adjustable oil metering... for the entire .4 to 1.5 gph firing range. Completely contained in the end cap, this new metering device permits simple adjustment while the unit is operating... the firing rate you need within one-tenth of a gallon. The exclusive *calibrated cover plate* takes the guess-work out of making adjustments, too. It's divided into tenths, so there's no mistake about the gallons delivered. The metering adjustment is simple in design, consisting of a slotted shaft integral with the metering cam. Turning the shaft rotates the cam to shorten or lengthen the intake stroke of the metering pump pistons. An "O" ring is used for sealing the shaft against leakage. Because of its design simplicity, servicing is no problem. If the metering device becomes inoperative, it can quickly be taken care of by replacing the end cap. For those who prefer a fixed metering arrangement, Sundstrand's Air-Oil Unit can be furnished with stationary metering cams. With these, the volume of metered oil is changed by using cams of various sizes. For further information on Sundstrand's Air-Oil Fuel Unit, write for Bulletin 1107-1.

Note: Burners must be designed specifically to use this Air-Oil Fuel Unit. Except on manufacturer's recommendations, the unit should not be installed in the field for conversion of high-pressure to low-pressure type systems.

Sundstrand Machine Tool Company, Hydraulic Division, Rockford, Ill.
High-pressure units made in Canada by John Inglis, 14 Strachan Avenue, Toronto



HIGH-PRESSURE UNITS



SUNDSTRAND

A name to remember in **FUEL UNITS**



*"these features
count on my jobs"*

install **Windmaster®** and see for yourself

Installation Features—You can mount Windmaster on a sloping, horizontal or vertical pipe—thanks to the thrust bearing effect of the nylon bearings. The variable size E-Z 'Dapter pipe stub is already blanked and flanged—an optional accessory that guarantees full size opening. Calibrated weight makes the use of draft gauge easier—speeds up accurate adjustment without trial and error.

Performance Features—Large square vane provides bigger relief opening for faster action—more sensitive control of draft the instant it is needed. Vane is mounted on 45° angle, eliminating half the travel distance—no quivering to encourage pulsation nor lag-time to keep burner nervous.

Mr. Ted Ulmer of Northern Indiana Heating Company, in South Bend says: "We never used to give draft controls a second thought until our first experience with Windmaster opened our eyes. With better control of drafts we can see a drop-off in service and customers are even bragging about their low oil bills. We realize now, the advantages of controlling drafts the Windmaster way."

Construction Features—Permanently silent bearings of molded DuPont nylon never rust, corrode or need oiling—and they outwear steel. Projections on bearings are permanent, positive stops that can't get bent—the vane can't go too far. Heavy gauge steel construction—attractive appearance. Three control sizes fit six different pipe sizes.

Put a Windmaster Draft Control on your next heating job and see how these features help you make the installation easier and quicker. Then check up on the burner performance and see how Windmaster helps assure peak efficiency and reduces service call-backs.

Stop in at your jobber's and pick up a Windmaster Draft Control for your next heating job.

Windmaster
Corporation

Post Office Box 776 • Columbus 16, Ohio

Windmaster
Draft Control

1854 - 1954
our 100TH year
OF SUCCESSFUL MANUFACTURING EXPERIENCE

YOU'LL SELL MORE PROFITABLE JOBS

with the complete line of

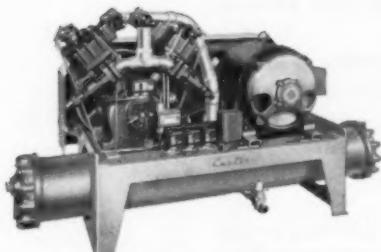
Curtis

AIR CONDITIONING AND
REFRIGERATION EQUIPMENT

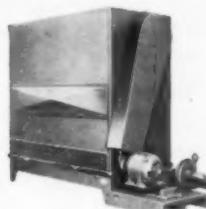
Every product in the Curtis line is built with
quality material and workmanship.

Curtis equipment is known around the world
for its dependability and efficiency.

With the complete Curtis line, you can handle any
installation for **Home, Office, Store, or Factory.**



Condensing units—through 80 tons



Evaporative Condensers,
Cooling Towers and Air
Handling units to match



NEW 1954 Curtis
Room Air Conditioner—an
attractive, efficient unit with a
BIG market potential

Packaged Units—
2, 3, 5, 7½ and 10 tons
Choice of open or semi-
hermetic compressors...
and 15 ton packaged
Central type units



Residential cooling
and heating units



National advertising in *Saturday Evening Post*, *Time*, *Newsweek* and
House and Home, plus many other publications helps sell Curtis to
your customers and prospects. Attractive new sales literature is
available to help you sell in your local area.

**CURTIS REFRIGERATING
MACHINE DIVISION
OF CURTIS MANUFACTURING CO.**

1982 KIENLEN AVENUE
ST. LOUIS 20, MISSOURI

765

Do You Buy Steel?

Here's a check list for evaluating suppliers

Steel has been in such short supply for so many years that there has been a tendency toward lower standards. With the situation now reversed, it may be well to raise our sights and give the production or fabricating departments a break.

With this in mind the following check list may be worth consideration.

First, on the character and capacity of the supplier:

- Is the supplier a good dependable company with a wide range of steels actually in stock so I can take full advantage of quantity differentials and save time in ordering and other office details?
- Am I establishing a business relationship with a company which will be able and willing to supply me with steel at fair prices next month or next year—even if demand should again exceed supply?
- Can I return the material if it has not been processed and I find that I can't use it?
- Can I count on the supplier to settle any reasonable difference of opinion to my satisfaction? Is the supplier customer-minded?
- Does the supplier have, not only the interest, but also the ability to carry my account in times of national stress or a possible financial difficulty?

Second, concerning the material:

- Is the steel of known, uniform quality so that I know what can be expected of it and can be sure of getting steel of the same uniform quality next month or next year?
- Is the steel accurate as to size or gauge so that no time is lost in extra processing? Is scrap minimized or eliminated?
- Is the steel in good condition? Has it been carefully stored, handled and shipped so that it will arrive ready for use?

Third, concerning the service:

- Can I depend on clean accurate cutting so that the steel will be immediately available for use without further cutting or preparation?
- Can I be sure of correct weight?
- Will the steel be delivered when promised so I will get it when I need it, even on very short notice?

No source is perfect, and we certainly do not pose as such. However, we have been serving industry—with good sound steel from stock at fair prices for over one hundred years. And we have been working with our customers in many other ways from helping with finances to solving problems of fabrication and inventory control.

We stand ready to serve you well whenever you call.

JOSEPH T. RYERSON & SON, Inc.

CARBON, ALLOY AND STAINLESS STEELS IN STOCK FOR IMMEDIATE SHIPMENT

STEEL SERVICE PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CHARLOTTE, N. C. • CINCINNATI • DETROIT • BUFFALO
CLEVELAND • PITTSBURGH • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

AMERICAN ARTISAN

No One-Ingredient Recipe for Success

THE CRY of "Hit 'em again — harder, harder, harder" has been reverberating from the walls of almost every convention hall this year. Heating, air conditioning and sheet metal dealers have, of course, heard their share of the doctrine that increased sales promotion and merchandising efforts can sustain the business boom and counteract any tendencies toward recession.

Far be it from us to minimize the importance of sales promotion and merchandising activities on the part of dealers. The Artisan regularly offers articles* designed to help in these efforts, for we know that well-planned and well-executed sales promotion and merchandising are essentials to business success. But we note approvingly the many authorities now pointing out that there "ain't no such animal" as a one-ingredient recipe for success.

For instance, the dean of the school of business of the University of Chicago, John E. Jeuck, recently told a Junior Chamber of Commerce group that increased selling efforts alone will not get consumers to spend the billions necessary this year to maintain 1953's high levels. To compete with the consumer's desire to keep his money, he said, we need two main things: Improved products and lower prices.

Improved products. What does this mean to the heating, air conditioning and sheet metal dealer? In most cases, it means top notch craftsmanship on every job. When the dealer is selecting cooling or heating equipment for a specific installation, when he's designing and fabricating a duct system, when he's making sheet metal specialties — he must do the best job possible using whatever new data, tools and techniques are at his disposal. If he's on his toes, he will develop new tools and techniques of his own, too. (See Shop Proves "Versatility Brings Success," in the January Artisan).

Therefore, he must keep informed. He can use NWAHACA and SMCNA manuals as well as articles in the Artisan.** He should also attend association-sponsored and other schools, courses and meetings.

And how about lower prices? This mustn't mean price cutting — selling at cost or lower just to undersell competitors or underbidding on contracts, with resulting deficits instead of profits. It should mean careful streamlining of office, shop and field procedure to save time and materials; it should mean keeping careful records of all costs (especially overhead) to see where they may be reduced and what is the optimum shop volume.

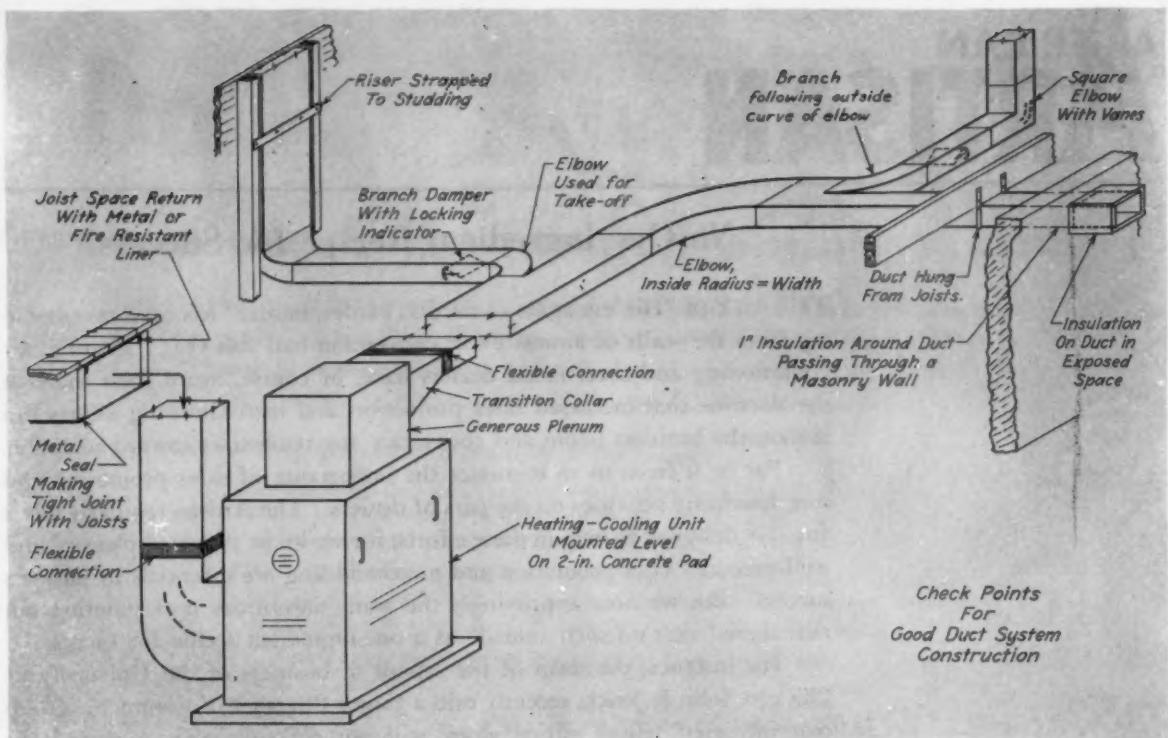
Dealers can get help on these matters from various business groups, from a variety of government publications and from current articles describing proper business methods and citing how individual dealers have increased efficiency and reduced costs.***

The heating, air conditioning and sheet metal dealer who moves ahead on all fronts — selling more, improving his "product" and lowering costs — will get his share of the consumer dollar and will be contributing to the nation's — and his own — prosperity.

*See for example the following Artisan articles, representative of many others: Dealer Closes Many Sales, Selling Mechanical Cooling in Dry Climates, January '54 issue; Letterheads with "Oomph" Swing Sales, Selling Evaporative Coolers, Dealer Sells the Farm Market, December '53 issue; Truck Advertising Costs Little, November issue; Stress Selling at NWAHACA Convention, October issue; What's Your Best Advertising Medium?, this issue.

**See for example the following: Cooling System Trouble Shooting, Perimeter Heating for Crawl Space Homes, this issue; Making a Double Elbow, Heated Slab and Baseboard Registers Perform Well, Diagnosing Cooling Equipment Ills, February '54 issue; Repairing the Roof over Our Head of State, Adding Cooling to Crawl Space Home, Heat Needed for Outside Air Intakes, Four Zone Perimeter Heating, January '54 issue — a few of a number in this classification.

***See for example the following Artisan articles, a typical selection of many of this type: How Much Does Insulation Save in Air Conditioning a Home? this issue; 5½ Hours to Install Warm Air System, What Business Costs Are Deductible?, February '54 issue; Economical Duct Layouts, Reducing Slab Floor Losses with Edge Insulation, January '54 issue; Many Roof Leaks Due to Other Causes, December '53 issue; Double Barreled Plan for Successful Shop, October issue.



GOOD DUCT SYSTEM installation requires that attention be given to a variety of details involving insulation, duct support, connections used, etc.

Cooling System Trouble Shooting

**Design and installation flaws can be diagnosed
by the service man who asks some important questions:**

- **Is equipment located to provide**
 - the most accessibility?
 - minimum vibration and noise?
 - protection against various types of troubles?
- **Is duct system designed and constructed to**
 - minimize pressure loss and noise?
 - stand moisture and stresses?
 - avoid air distribution inequalities?
- **Is cooling unit sized correctly for the job?**

By S. W. Reid
Air Conditioning Engineer
Gilbert Associates, Inc.

LAST MONTH we looked over the shoulder of a service man as he checked a residential air conditioning installation which, according to the owner, was "not working like it used to". To proceed in an orderly fashion in analyzing a complaint of this nature, we asked ourselves whether the cause of the complaint was 1)

failure of a part, 2) improper adjustment, 3) poor construction, or 4) poor design. In this particular case, we saw how the service man discovered and replaced a defective part. We also followed him through a systematic adjustment schedule which covered the major points in an air conditioning system that re-

quire attention. The owner of the system analyzed was fortunate in that the service man was able to provide a "yes" answer to questions 1 and 2 above and a "no" answer to questions 3 and 4. If the two latter answers had been "yes," our home owner in last month's story might have been in more serious difficulty.

Much as the dealer may hope that all service calls will stem from either a defective part or improper adjustment, he must face the fact that some complaints, if they are honestly pursued, will lead to poor installation or poor design as the underlying factor. In an existing system, poor construction is more easily corrected than are the consequences of poor design.

Installation and design are closely related. It is often difficult to define each sharply enough to draw a clear line of distinction between them. Theoretically, the designer of an air conditioning system could take enough time to plan and specify every part of the system down to the location and size of the last screw. If he supplied constant supervision to see that his ideas were carried out to the letter, it would be practically impossible to develop any installation faults. All responsibility for error would fall on the shoulders of the designer. In actual practice, however, the designer passes a good deal of his responsibility on to the man who does the installation work. For our purposes, we will assume that the designer takes the responsibility for selecting the proper size cooling plant, for sizing ductwork, for selecting and locating supply registers and return grilles, and for designing the control system. We will allocate to the installation man the responsibility for putting the equipment in and for fabricating and installing the duct system.

Proper Placement Important

No matter who decides upon the exact location of the air conditioning equipment, he must recognize that the unit is a piece of mechanical equipment that will require service of one type or another from time to time. The service man who finds

the equipment accessible when the need arises will certainly appreciate the forethought of the men who planned the installation.

On occasion, the service man may find it necessary to break and remake pipe connections to the unit. On one installation it was actually necessary to remove a fan section in order to gain access to such connections. This might be called an installation fault. It could have been avoided. Another installation required the disconnecting and moving of an entire unit which had been placed so close to a wall that a coil leak could not otherwise be repaired. Hermetic compressors must sometimes be replaced. Sufficient space must be allowed to withdraw a component of this type.

In addition to keeping the service man in mind, the man who locates equipment must also remember the home owner. Air conditioning equipment may produce a certain amount of noise. Complaints have been made about installations beneath or too close to bedrooms. Acoustical treatment can be used to minimize noise where such locations are unavoidable. Attic installations are particularly bothersome from a noise and vibration standpoint. Special attention must be paid to proper means of isolation.

Neighbors may find certain cooling tower installations objectionable. Not only noise but escaping water spray and even air motion have been a source of complaint. Unsightliness of some cooling towers has been a source of irritation to owners. The dealer should be prepared to suggest means for landscaping or otherwise shielding such towers from view.

Supplying Combustion Air

Inaccessibility, noise, and unsightliness are not the only complaints that may arise from poor placement of equipment. Functional difficulties may be encountered as well. Air conditioning equipment is often located in the same room with combustion-type heating equipment or hot water heaters which require air for proper functioning. As the warm

(Please turn to page 104)

Air Conditioning Fundamentals

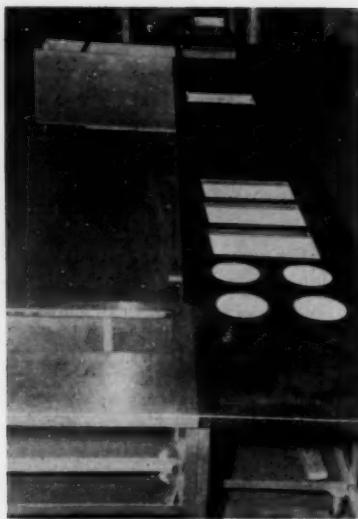
This is the 18th in a planned series of articles devoted to the fundamentals of air conditioning systems for summer and winter, and providing specific information on all the component parts. Special emphasis is placed on how to adapt cooling to warm air heating systems.

Articles So Far:

1. The terms used in the air conditioning field, i.e., air properties, comfort conditions, etc. (September, 1952 issue).
2. The parts of the refrigeration system and how they work (October, 1952 issue).
3. How to estimate cooling loads (November, 1952 issue).
4. How to achieve proper air stream patterns in the conditioned space (December, 1952 issue).
5. Duct design — comparison between sizing for summer and winter (January, 1953 issue).
6. Condensing units (February issue).
7. Fans, fan motors, and fan speeds (March issue).
8. Filters—throwaway, cleanable, electronic (April issue).
9. Condensers and water regulating valves (May issue).
10. Cooling towers and evaporative condensers (June issue).
11. Equipment selection (July issue).
12. Electrical control systems (August issue).
13. Electric controls (September issue).
14. Sample problem — estimating cooling load and selecting equipment (November and December issues).
15. Second sample problem, using different building and conditions (January 1954 issue).
16. Trouble shooting — detecting poor functioning of cooling equipment (February and this issue).

Future Articles:

Replacement procedures for defective parts (two articles).



1 THIS 30 FT stainless steel counter, custom made for a high school cafeteria, is fabricated in five main sections. Brackets being fastened to the counter (*right*) support a shelf over the main section

Sheet Metal Shop Produces "Just What the Customer Orders"

... in the form of custom made
cafeteria counters, sinks, cabinets, milk
coolers, etc., and custom fitted
industrial roof ventilators

THE FABRICATION of sheet metal specialties is exacting work, requiring craftsmanship of the highest quality. This skill can be obtained only with long experience in meeting the individual requirements of particular customers. One sheet metal contractor who goes to great lengths to give the customer what he wants is Mike Cutter of Cleveland. Mr. Cutter specializes in custom made stainless steel products which he ships to all corners of the United States.

One of the specialties recently completed by the Cutter shop is a 30 ft stainless steel cafeteria counter with two 5 ft wings (Fig. 1, left), fabricated for a Cleveland high school. The counter is built to meet the customer's specifications. The first section (bottom, left, Fig. 1)

contains a low shelf upon which the trays are stored. The next opening is where the napkins and silverware trays are kept.

A second section contains the round openings which are asbestos lined, electrically heated compartments in which the deep pots of soup, gravy and potatoes are kept hot until used. This portion replaces the steam table normally found in this type of counter. Heating the compartments electrically reduces the amount of moisture usually added to the warm air in the vicinity of food serving counters. The rectangular openings are for pans of cooked vegetables and meat which have been prepared for immediate serving but which must be kept warm until sold. Thermostatically controlled electrical heating ele-



2 THE COUNTER FRAME consists of $1\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{4}$ in. angle iron (left) which is covered first with 16 gage sheets (right), then with stainless steel



3 CUSTOM MADE SINK and drainboard are welded together by a specialized technique developed by shop owner, Mike Cutter (supervising the welding operation at left). After the welding is complete, the joint is ground to a smooth finish (right) and then polished four times to remove welding stains and make it appear that drainboard and sink are one piece

ments are used to maintain the temperature of these compartments.

Two Wells Refrigerated

A third section contains a shallow well for salads which are kept cool while on display. The refrigerated well is the wide indentation in the table beyond the rectangular openings. This cold well comprises a stainless steel pan that has copper tubing attached to its underside. The tubing forms the evaporator for the refrigeration system. The copper coils are covered with a $\frac{1}{4}$ in. asphalt compound to eliminate the possibility of moisture condensing on the coils. Below the coils a layer of 2 in. cork is used to insulate the refrigerated compartment. This compartment is completed by covering the cork, asphalt and tubing with galvanized sheet. The refrigeration equipment is installed beneath the salad well; this makes the section independent of the other sections which contain the heated wells.

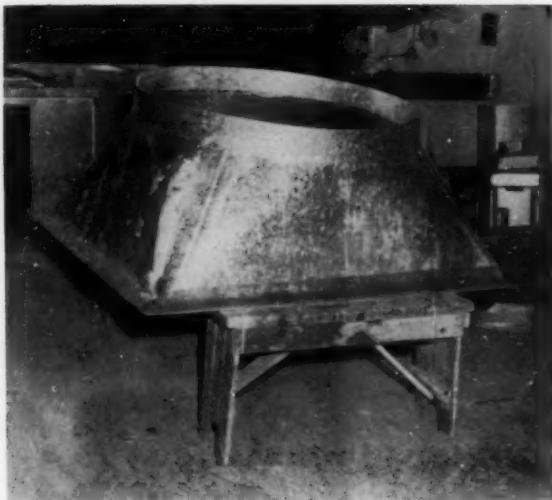
A fourth section contains a sunken well that is also

refrigerated. Half pint bottles of milk are stored here in trays that are set one upon the other. The weight of each tray keeps the tray beneath pressed into the refrigerated section, but as the milk is sold the top tray becomes lighter so that the tray beneath it rises to the counter top level when the top tray has become empty. The storage well is insulated with 3 in. of cork and contains a refrigeration coil similar in construction to the coil used in the salad well. The square opening at the end of the third section is to permit servicing of the milk dispensing section when the milk supply needs replenishing. The cash register is at the end of this section.

The fifth section is for supplementary serving when larger than usual crowds are handled. The wells are similar to those in the second section and are thermostatically controlled to maintain the temperature desired.

How Counter is Fabricated

Although the sections are joined together to give the impression of being one long counter, they are fabricated



4 THE FIRST step in fabricating another specialty of the house — an industrial roof ventilator — is completing the square to round transition (left), after which the motor support and shutter frame are installed (right). . .



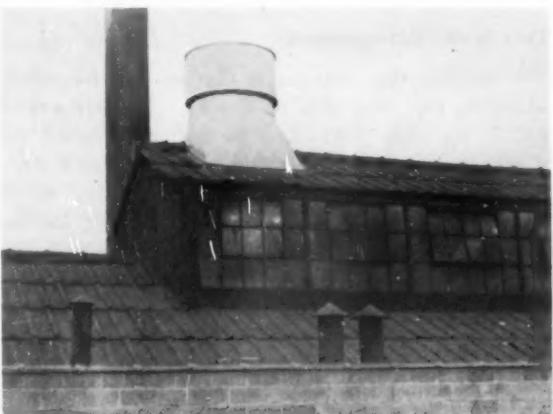
5 THE SHUTTER and fan assembly is completed (left), and as a final step in the shop procedure, the discharge guide shield is installed (right)

to permit the limited disassembly necessary for shipping the unit and moving it through doorways prior to installation.

The frame of the counter is made of $1\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{4}$ in. angle iron (Fig. 2, left) which is covered across the front and sides with sheets of 16 gage galvanized iron (Fig. 2, right).

This sheet in turn is itself covered with 14 gage stainless steel. The top is fabricated in a similar manner; however there is a soundproofing asbestos cement sprayed on top of the galvanized sheets before the stainless steel top is placed into position in order to minimize some of the usual cafeteria noises.

The counter was completed by attaching brackets (Fig. 1, right) for supporting shelves where sandwiches, bread and desserts are displayed. The tray shelf along the front of the counter is supported by stainless steel brackets and consists of four stainless steel tubes running the



6 THE FINISHED PRODUCT is custom fitted to the roof — which in this case is tile covered and peaked



7 ANOTHER SPECIALTY fabricated by the shop is this combination milk cooler (for two 5 gal cans) and glass tray storage well. The glass filler and water valve assembly will be installed in the end where Frank Reunik is measuring for a drain connection



8 ENGINEERING DETAILS of all the shop's products are worked out in this recently modernized office. R. G. Cummer (*left*), of the sales and engineering department, and George J. Meinzer, shop superintendent, check over some plans in the final stage before operations are to begin

entire length of the counter. These were installed after the counter had been moved into position inside the cafeteria.

Sink Welded to Drainboard

Fig. 3 shows one of the sinks used in the kitchen where the food is prepared. Each sink is fabricated to fit a certain location and must be shaped to meet the contours of the wall against which it will be placed. This sink was designed to permit the well to fit between two cabinets that contain a number of utility service access openings.

The well is joined to the drainboard with stainless steel welding rod, first by spot welding and then making one complete weld around the entire sink well. Welding the drainboard to the sink well eliminates the need to form an overlapping lip on the drainboard, avoiding the sharp edges and possible accumulation of grease and soap that may occur when one piece of metal overlaps another. The welding bead where these two parts are joined is ground to a smooth finish with an electrical grinder (Fig. 3, right) and then polished until it appears to the observer that the drainboard and the sink well are one piece.

Industrial Ventilator a Specialty

Another of the Cutter sheet metal shop specialties is an industrial ventilator made in sizes up to 60 in. in diameter. The one illustrated in Figs. 4, 5 and 6 is a 48 in. size which has a capacity of 29,000 cfm and a discharge velocity of 2000 fpm. Each ventilator is built from the same basic plan and is fitted to a base designed specifically for the spot in the roof upon which the ventilator is mounted.

The first section of the ventilator is made of 16 gage galvanized sheet metal. Upon completion of this square

to round transition, (Fig. 4, left) the motor support and shutter frame are installed (Fig 4, right). The shutter and fan assembly is shown in Fig. 5, left. The shutter flaps are fastened with ball bearing pivots so that they can be easily forced open by the air pressure when the fan is started. The ball bearing pivots assure that the shutter flaps will return to their original position when the fan is turned off. The flaps are designed to slant outward when they are in the closed position, forming shed that prevents rain from entering the ventilator opening when there is an outward flow of air. The rain water is shunted into a built-in gutter that drains to the outside of the ventilator.

Completing the Assembly

As can be seen from Fig. 5, left, the fan motor shield has its own breather duct which uses outside air to keep the motor cool. Also, the motor shield, with its outside air intake, prevents the passing of contaminating fumes over the motor, thus reducing motor deterioration by corrosion. Galvanized sheet metal (24 gage) is used for the flaps, which are coated with a corrosion resistant paint to provide the best protection possible against any deterioration which might be caused by the weather or fumes.

As part of the final shop assembly of the ventilator, the discharge guide shield is installed (Fig. 5, right). The individual sections are held together with sheet metal screws so that periodic inspection of shutter flaps, motor and fan blades can be made without too much difficulty. The individual parts of each section are joined by either riveting or welding — whichever is most convenient to perform.

Among the other specialties fabricated by the shop are various types of stainless steel cabinets and milk coolers (Fig. 7).

UP TO THIS POINT in the discussion the research results obtained in the warm air heating research project at the University of Illinois have been presented. A major portion of this research was done in connection with basementless homes built over a concrete floor slab. Another type of basementless home which is less frequently used, but which is nevertheless of importance in certain sections of the country, is the house built over a crawl space. At this time there is little research data available on these homes, although considerable field data has been obtained from extensive work by the field investigation committee of the National Warm Air Heating and Air Conditioning Association.

In this article the emphasis will be placed upon two main questions:

1) What were some of the previous practices and some of their limitations?

2) What can be done with equipment presently available, and what are some of the problems that should be considered when installations of newer types of systems are made?

Prior to 1940 the warm air heating industry had heated crawl space structures with conventional, or overhead, duct systems. The systems in common use consisted of the following types of warm air heating equipment:

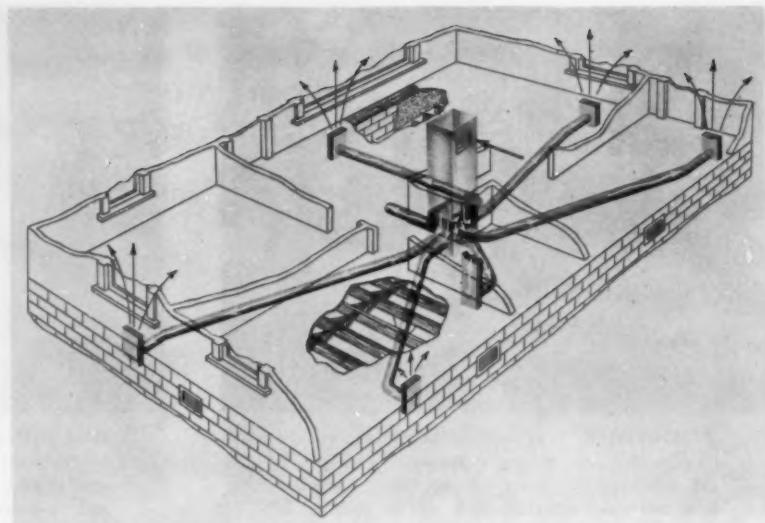
1) Upflow furnace located in a utility room or closet space, with the warm air ducts located in the attic space and with the registers located a) in the ceiling, b) at the high inside sidewall location, or c) at the low inside sidewall location.

2) Horizontal furnace located in the attic space and with the warm air ducts also located in the attic space.

3) Upflow furnace located in a utility room or closet space, with the warm air duct system consisting of a box plenum located in a central hallway. Short stub ducts were attached to the box plenum and were connected to the high sidewall registers.

Some Early Difficulties

Some dealers making the installation of warm air heating systems in



1 FOR SMALL CRAWL SPACE homes or homes with centrally located furnaces, a radial system is often used . . .

Perimeter Heating for

By S. Konzo and H. T. Gilkey

University of Illinois

these prewar crawl space homes expressed the opinion that one or more of the following situations occurred too frequently in this type of installation:

When warm air was introduced from a ceiling or high sidewall register, the heated air tended to stratify unless high register velocities were used and large air flow rates were maintained.

However, when high velocity air was discharged from registers, customers complained of drafts.

The wood flooring over the crawl space provided a cool floor surface unless the floors were insulated or the crawl space vents were tightly sealed.

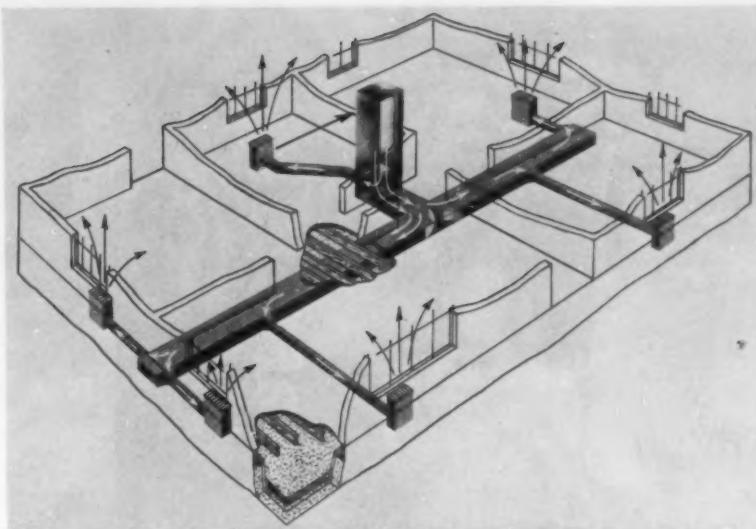
If uninsulated warm air ducts were located in the attic, the heat loss from the ducts escaped to the attic air. This heat was not available, as

it should have been, for heating the rooms below.

Taking these factors into consideration, the heating dealers indicated that some newer approach to the heating of crawl space homes might be welcome. Such an innovation was the downflow furnace attached to a connected duct system located in the crawl space.

Perimeter Heating Applied

The downflow furnace, which was developed primarily for use with the perimeter loop system in the slab floor home, allowed the principle of perimeter heating to be applied to the crawl space home. In fact, the results from the field investigation committee have indicated that many of the limitations of other types of heating systems for crawl space houses



2 WHILE AN EXTENDED PLENUM system often connects subfloor plenums to registers in larger homes

Crawl Space Homes

The heating methods described so far in this series have been for homes built on concrete slab floors.

Now the authors describe methods for heating another important type of basementless home

could be overcome by means of perimeter heating.

Perimeter heating as applied to the crawl space home has the following characteristics:

Registers or diffusers are located at the perimeter or outside wall of the house, either a) low in the sidewall, b) in the baseboard, or c) in the floor. The registers are usually located underneath windows.

A downflow furnace is used and the warm air is discharged from the furnace into a plenum located in the crawl space (See Fig. 3).

The warm air flows from the plenum either through a duct system which connects the plenum to the registers or directly into the crawl space and eventually through the registers into the rooms overhead.

The return air intake is located

centrally and in the ceiling or high in the sidewall, so that only a short return air duct is needed.

Any of the commonly used duct systems may connect the subfloor plenum to the registers.

Perhaps the most simple is the radial duct system shown in Fig. 1. In this system, which is suitable for small homes or for centrally located furnaces in larger homes, individual ducts connect the subfloor plenum to the registers.

For larger homes, either the trunk and branch system or the extended plenum system (Fig. 2) may be used.

In any case the branch ducts can be of large duct size (6 in., 7 in., and 8 in. diameter) or of small duct size (3 in. to 5 in. diameter).

Design procedures for these vari-

(Please turn to page 86)

How We Got Where We Are In WARM AIR PERIMETER HEATING

the 15th in a series
planned to tell about:

► Investigations in the Research Residences at the University of Illinois

► Design and installation data (condensed from manuals published by the National Warm Air Heating and Air Conditioning Association)

► Specific phases of warm air heating

... in articles so far:

► heating basementless homes

► warm air ceiling panels

► heating slab floor homes with ceiling and floor panel systems

► floor panel-convection heating for slab floor homes — partially open and completely open

► survey of field practices

► new research residence built

► comparison of two loop perimeter and three convection systems

► comparison of perimeter loop and two loop system

► loop vs. radial system

► perimeter laboratory studies (three articles)

► crawl space heating



OFFICERS FOR THE Minnesota group for the coming year include (*sitting, l. to r.*) D. H. Farnham, secretary; W. A. Swenberg, vice president; R. J. Kraus, president; Joseph Bartl, treasurer; (*standing, l. to r.*) directors R. E. Walsh, Norton Jamar, Harry Quade, Jr., Morgan Nelson and Roy Dose'; and Fred Kuettel, sergeant at arms

One Method for Figuring Overhead

... as related to specific job costs was described at a recent meeting of Minnesota roofing and sheet metal men. Also covered — air conditioning, apprentice training, bid shopping

IN HIS OPENING address to the convention of the Sheet Metal and Roofing Contractors Association of Minnesota, held in Minneapolis February 11 to 13, President R. E. Walsh stressed an important theme of the meeting — association service to contractors — and also previewed the other important themes to come — summer cooling, apprentice training, business management and trade relations.

As an example of association service, he described a committee set up to aid contractors who do work outside the general geographical area in which they usually operate. "During the 1953 convention," he said, "a discussion arose as to what was expected of a sheet metal contractor who had submitted a bid and obtained a contract to do work outside his area, since it had been found that many rules applying in one community do not apply in others." To find out about these varying rules so that contractors might better be prepared to comply with them, the association established a group

known as "area advisers" in nine separate locations throughout the state. Each of the men appointed was asked to send to the president's office a report which would give, among other things, the date of his contract with organized labor, the wage rate, the overtime rates and any other working conditions that might affect an outside contractor moving into a particular area to do the work. "All nine of these men cooperated fully," Mr. Walsh said, "and we have on file a complete tabulation of the conditions in each area. This information is now available to any member who may request it."

He stressed that though the plan was established to gather general information regarding labor matters in each area, it could go far beyond that if contractors in each locality wished to avail themselves of the opportunity. "For instance," he said, "I have in mind the establishing of local groups — not necessarily confined to a single city or town — of contractors who work in a given area. Regular meetings could be held and a code



PREVIEW OF SLIDES on the refrigeration cycle is given by Otto Ress (*third from left*) to convention committee (*l. to r.*) Leo Nees, Tom Burneice, Jr., and R. E. Walsh



THE TRADE RELATIONS forum was moderated by Walker Jamar, sheet metal contractor (*second from left*). Architects participating are (*l. to r.*) P. M. Campbell, S. L. Stolte and Paul Liebelt



THREE SCOUTMASTERS (*at left*) — all old friends — met at the convention. They are (*l. to r.*) C. E. Parrott, C. H. DeLaughter and Walker Jamar. At right are some of the ladies and their out-of-town guests who attended the ladies' luncheon and style show



of ethics adopted. We know of one group which meets regularly every week and I can say that much has been accomplished. It has been the general custom in many localities to have the contractors get together only when their mutual problems warranted such a meeting. Regular and frequent meetings are the solution of a lot of problems and I strongly urge that something be done along this line."

Mr. Walsh pointed out that another association service is keeping members informed on current trends in their industry. He then outlined in more detail the various subjects to be covered in the convention, stressing that members would be hearing the latest information available in each field.

Officers Elected

Officers for 1954 were elected through the use of a multiple slate (at least two members being nominated, and their names posted, for each office). A written ballot was cast, and the following were elected: R. J. Kraus, president; Walter Swenberg, vice president; D. H. Farnham, secretary; Joseph Bartl, treasurer; and Fred Kuetel, sergeant at arms. Directors elected for two years are

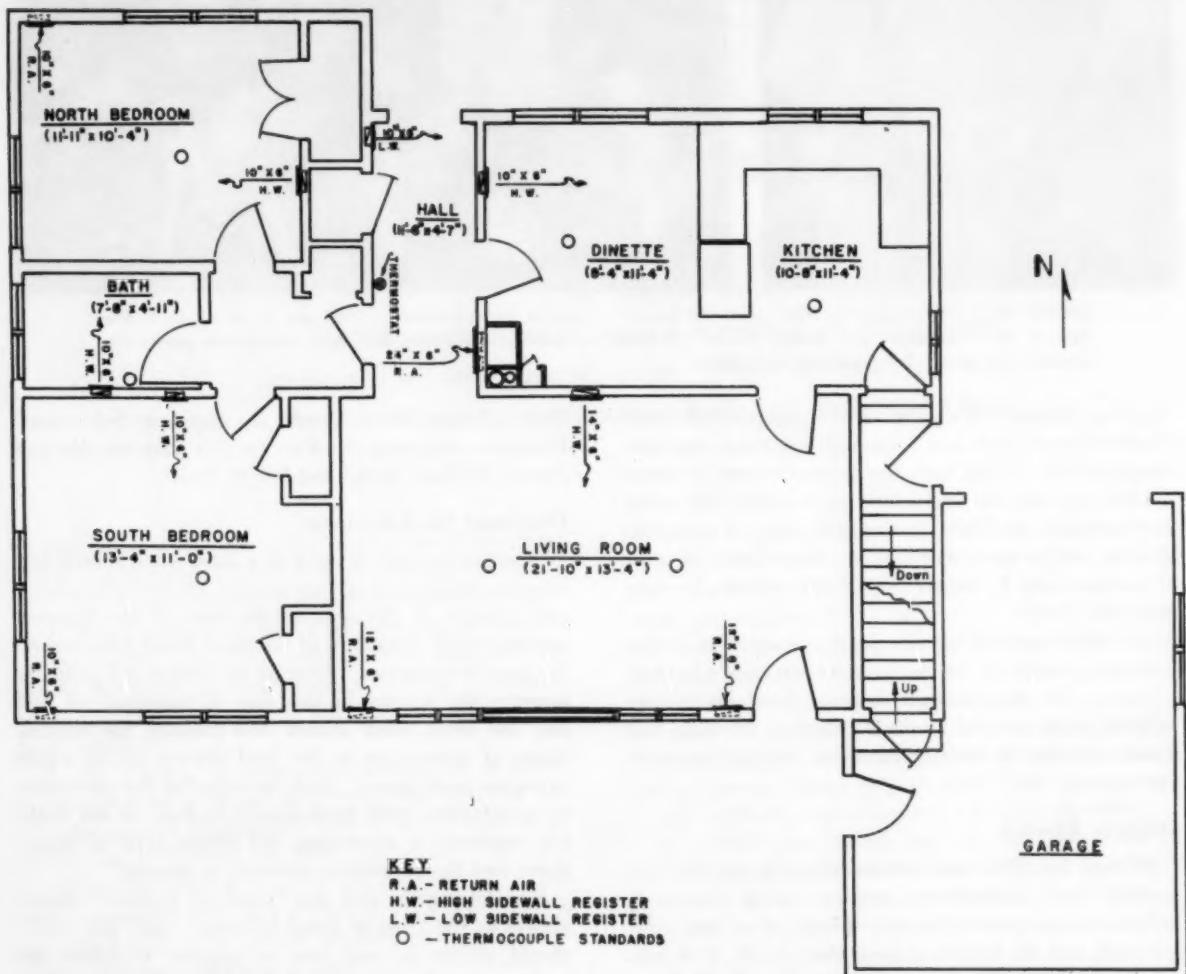
Norton Jamar, Harry Quade, Jr., and Leas Schwickert. Directors remaining in office for one year are Morgan Nelson, Willard Ahrens and Roy H. Dose'.

Overhead Vs. Job Costs

"Economical management of a sheet metal contracting business begins with a firm control of cost allocation," said Charles H. DeLaughter, chairman of the business administration committee of the Sheet Metal Contractors' National Association. "In order to compile and properly preserve the figures in this line of business, we feel that the detail work should flow through the various stages of accounting to the final determination, which is the net profit figure. And, in order for this continuity to be complete, some work should be done on the methods employed in estimating, the proper type of breakdown, and the accounting structure in general."

Mr. DeLaughter said that "overhead expense" should always be the "cost of doing business," and "job costs" should always be any item of expense to which the business would not be put if the dealer didn't have the job to which the expense should be charged.

(Please turn to page 115)



1 CALCULATIONS WERE MADE to find out how well insulation reduces heating and cooling loads in a residence identical to the one shown

The Question:

How Much Does Insulation Save In Air Conditioning a Home?

The Answer:

\$240 spent on insulating a small home would cut

- **initial cost of conditioning equipment \$840**
- **operating expenses by \$2.29 (over 58 per cent) per design day**

By H. T. Gilkey and D. R. Bahnfleth

University of Illinois

THE USE of insulation to reduce heating loads has long been recommended in both residential and commercial construction. Its acceptance has become so widespread that in the colder regions of the United States it is impossible to build a residence which will conform to the minimum property requirements of the Federal Housing Administration without

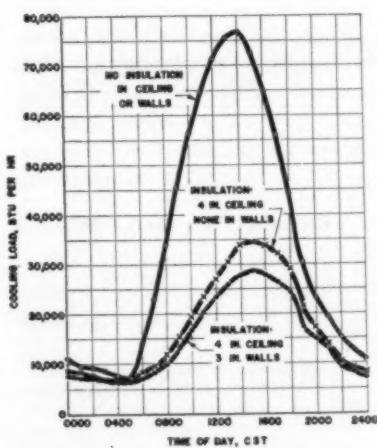
making use of insulation in some form. Furthermore, the home owner can easily be shown that the cost of insulation will be repaid many times over in reduced fuel bills. Home owners have also found that an insulated home is more comfortable to live in during all seasons of the year than is an uninsulated home. To this argument there has recently been added the fact that an insulated residence can be air conditioned with a smaller cooling unit and that the operating cost will be much lower than if the house were uninsulated. Thus, the initial investment required for adequate insulation in a residence can now be considered to pay for itself during both the heating and cooling seasons.

The popularity of air conditioning for the home has introduced new factors in residential construction, and it has re-emphasized the need for the use of good practice in other phases of home planning and design. As steps are taken to reduce the cooling load of residences by the use of fixed and shaded windows and the use of smaller windows and heat-absorbing glass in those

exposures where large solar gains may be expected, the use of adequate and properly installed insulation will become more important. Of course, using adequate insulation in the walls and the ceiling of a residence will materially reduce the cooling load of today's homes, but, as the other sources of heat gain are reduced, the heat transmitted through the walls and ceiling becomes an increasingly large proportion of the total cooling load. The only practical way of reducing these loads is by the use of insulation.

Which Factors Calculated?

We can determine by calculation the effectiveness of mineral wool insulation in reducing the heat transmission through the walls and ceiling of a typical residence. The size of the equipment necessary to heat and cool the residence can also be determined. In the case of heating, we can estimate the operating costs for an average season. Because this type of information has been presented in the past, the emphasis of this article will be placed on the effect of insulation on the cooling loads, the sizes of units needed, and



2 RESULTS indicated that hourly cooling loads were markedly reduced as insulation was applied

the operating costs for a design day. The effect of insulation in reducing the heat loss of a residence will also be shown.

To illustrate the effectiveness of mineral wool insulation in reducing the heating and cooling loads, calculations were made for a typical small residence. The residence upon which the calculations were based was identical to Warm Air Heating Research Residence No. 2 at the University of Illinois (Fig. 1) except for minor changes in wall and ceiling construction. These changes were made to accommodate the various insulation conditions which were considered.

The calculated results, to be described in detail, can be summarized by plotting the hourly cooling loads (shown in Fig. 2) for the three insulation conditions for which calculations were made. These are the total cooling loads, and they include gains from all of the sources considered. It can be seen from these curves that the use of insulation not only reduces the design cooling load, but it also reduces the total heat removed by the refrigerant and the operating cost in about the same proportion.

Residence Described

The residence considered was a one story, frame structure with a large amount of glass exposure and with a full basement. The exposed wall section consisted of cedar shingles, 20 lb felt building paper, shiplap sheathing on 2 in. \times 4 in. studdings placed on 16 in. centers, and $\frac{3}{8}$ in. plywood panels. The coefficients of heat transmission were calculated on the basis of no insulation and 3 in. of insulation in the walls (See Table 1). All windows and doors were well fitted and were weatherstripped.

For the purposes of calculating the cooling load on the residence, it was assumed that the windows on the east and west exposures were equipped with canvas awnings, and that the south exposure of the residence was shaded by a 3 ft, 10 in. roof overhang. Except for one large picture window in the living room,

which was fixed in place and consisted of two panes of glass, the windows were single glazed. The doors were of conventional wood and glass construction. For the purposes of calculating the heat loss of the residence, it was assumed that all of the windows were equipped with tight-fitting storm sash, and that the exterior doors were equipped with storm doors.

The ceiling of the residence consisted of 2 in. \times 4 in. joists placed on 16 in. centers, and gypsum lath and plaster. As was the case with the exterior wall section, the coefficients of heat transmission for the ceiling were calculated on the basis of no insulation and 4 in. of insulation, which was assumed to be placed between the joists (See Table 1). The roof was of conventional gable construction — asphalt shingles, and 20 lb felt building paper placed on shiplap sheathing. No insulation was placed between the rafters.

As can be seen from the floor plan (Fig. 1), the residence contained a living room, a kitchen-dinette, two bedrooms, and a bath. The ceiling height was 8.5 ft, and the ceiling area was 1040 sq ft. The net wall area of the residence was 848 sq ft, and the total glass area was 273 sq ft. The volume of the residence was 8146 cu ft, including all closets.

Methods of Calculation

The cooling load of the residence was calculated under the conditions

of maximum heat gain, which occurs at approximately 3:00 p.m. The method of calculating the cooling load was that presented in the Heating, Ventilating and Air Conditioning Guide¹, and the heat gain through the walls and ceiling of the residence was calculated using the sol-air temperature method. The cooling load calculations were based on outdoor design conditions of 95 F dry bulb and 76 F wet bulb temperatures, and indoor conditions of 75 F dry bulb and 62.5 F wet bulb temperatures (50 per cent relative humidity). Ventilation air was assumed to be mechanically introduced into the residence at the rate of 120 cfm, approximately one air change per hr for the residence, excluding the volume of the closets and other portions of the residence which were not considered to be living space. The residence was assumed to be occupied by a family of two adults.

Although this method of calculating the cooling load is known to be conservative² in that a larger load is calculated than will be encountered in practice, it is felt that the relationship among the calculated loads for the various insulation conditions would be similar to those encountered in actual practice. Thus,

¹Heating, Ventilating and Air Conditioning Guide, American Society of Heating and Ventilating Engineers, New York, 1952.

²Cooling a Small Residence with a Two-Horsepower Mechanical Condensing Unit, H. T. Gilkey, D. R. Bahnfleth and R. W. Roose, ASHVE Journal Section of Heating, Piping & Air Conditioning, February 1953.

TABLE 1—CONSTRUCTION DATA on walls and ceiling of residence

	Thickness of Mineral Wool Insulation, (in.)	Coefficient of Heat Transmission Btu/hr (sq ft) (F)
Exterior Walls — Wood shingles, wood sheathing, 2 in. \times 4 in. studdings on 16 in. centers, $\frac{3}{8}$ in. plywood	0	0.24
	3	0.075
Ceiling — 2 in. \times 8 in. joists on 16 in. centers, gypsum lath plastered*	0	0.61
	4	0.076
Outside Doors		
Front Hall — wood door		
without storm door	—	0.51
with storm door	—	0.30
Living Room — glass with wood sash		
without storm door	—	0.85
with storm door	—	0.39
Windows		
Single pane	—	1.13
Single pane with storm sash	—	0.55
Double pane, fixed in place	—	0.55

*Insulation of indicated thickness was placed between the ceiling joists. No insulation was placed between the rafters.

if a certain reduction in the cooling load is predicted by the use of insulation, the reduction experienced in an actual residence should be very similar to that predicted. Furthermore by the use of this method of calculation, the total heat removed from the residence during a 24 hr period may be predicted, and consequently the operating cost may also be predicted.

The power and water consumptions and the operating costs for cooling the residence on a design day were determined by calculating the cooling load for a 24 hr period. The night-time temperatures were those tabulated in the ASHVE's Heating, Ventilating and Air Conditioning Guide, and the total energy entering the residence was determined by integrating the area underneath the cooling load curves for the 24 hr period. The size and cost of the equipment necessary to cool the residence were determined from the cooling load calculations. The cost of the duct system was not included.

The heat loss of the residence was calculated by methods³ based on those presented in the Guide. The condition of maximum heat loss was considered to be one of no solar heat gain, a 15 mph wind, and no interior heat gains. Thus, even though occupancy by a family of two adults was assumed for calculating the cooling load, the residence was assumed to be unoccupied for the calculation of the heat loss. This is the normal procedure used in residential heat loss calculations. The indoor temperature was assumed to be 70 F, and the outdoor temperature was assumed to be -10 F, giving an indoor-outdoor temperature difference of 80 F.

Cooling Loads and Capacities

The design cooling load was calculated for the following insulation combinations:

³Manual No. 7, Code and Manual for Design and Installation of Warm-Air Winter Air Conditioning Systems, National Warm Air Heating and Air Conditioning Association, Cleveland, Ohio, 4th edn., 1953.

⁴Manual No. 11, Summer Air Conditioning, National Warm Air Heating and Air Conditioning Association, Cleveland, Ohio, 1st edn., 1953.

No insulation in walls or ceiling. 4 in. in the ceiling and none in the walls.

4 in. in the ceiling and 3 in. in the walls.

The design cooling loads and the capacities of the cooling units are shown in Table 2. A 6 ton unit would be needed to cool the residence if both the walls and the ceiling were uninsulated. If 4 in. of insulation were used in the ceiling and the walls were uninsulated, it would be necessary to have a 3 ton unit to cool the residence. A 2 ton unit would be needed for the residence completely insulated with 4 in. in the ceiling and 3 in. in the walls.

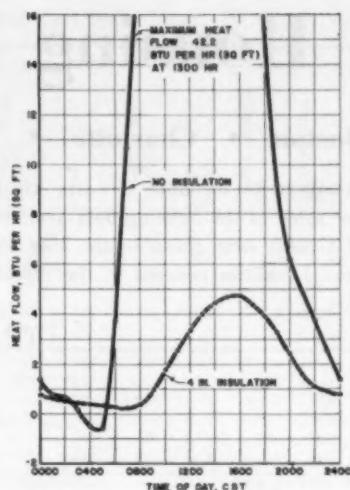
The design cooling loads were rounded off to the nearest ton of refrigeration in order to size the cooling units. It should be pointed out that the air conditioning industry has cautioned⁴ against the use of oversized cooling units. Because of longer periods of compressor operation, lower relative humidities are experienced in the living space of the residence when the cooling units are correctly sized or slightly undersized. It is felt that these lower humidities are desirable even though the indoor air temperatures might rise above the control temperatures.

The effect of insulation in the ceiling and the walls is shown in Figs. 3, 4 and 5. On each of these figures are plotted the heat flows for the thickness of insulation considered. The need for insulation is greatest in the ceiling. With no insulation, the maximum heat flow is 42.2 Btu per hr per sq ft and with 4 in. of insulation, the maximum is 4.7 Btu per hr per sq ft. In the case of the south wall (Fig. 4), the maximum heat flow for the uninsulated wall was 9.7 Btu per hr per sq ft. With 3 in. of insulation, the maximum rate was 2.6 Btu per hr per sq ft.

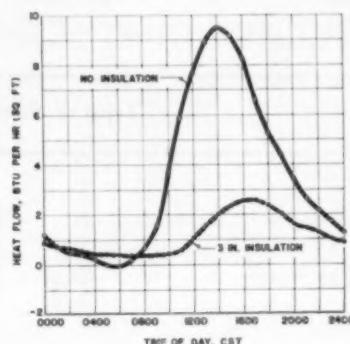
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TABLE 2—DESIGN COOLING LOADS and capacities of cooling units

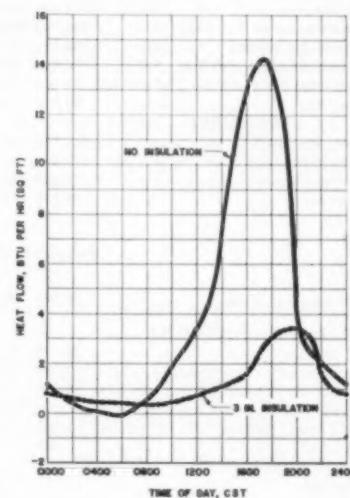
Insulation Thickness (in.)	Walls	Design Cooling Load (Btu/hr)	Capacity of Cooling Unit (tons)
0	0	76,960	6
4	0	34,590	3
4	3	28,600	2



3 HOW INSULATION reduced calculated heat flow through the ceiling . . .



4 THE SOUTH WALL . . .



5 AND THE WEST WALL of the residence

Housing Census Heating Data

Boston • Charlotte • Columbus • Madison • Oklahoma City • Tacoma

SUGGESTIONS on how a warm air heating dealer can use some of the housing data available from the Bureau of Census were given in the May 1953 American Artisan. Localities covered in the reports are metropolitan

areas that are socially and economically integrated with the central city. Data for various areas has been reported in American Artisan for June 1953 to January 1954, inclusive. Additional reports will appear regularly.

Types of Fuel Used in Centrally Heated Dwelling Units

The area	Standard Metropolitan Areas					Charlotte N. C. Mecklenburg County	Columbus O. Franklin County	Madison Wis. Dane County	Oklahoma City Okla. Oklahoma County	Tacoma Wash. Pierce County	
	Part of Essex County	Part of Middlesex County	Part of Norfolk County	Part of Plymouth County	Suffolk County						
All dwelling units	667,412	80,427	233,627	96,911	7,158	249,289	54,332	148,214	48,022	108,083	85,258
Number reporting heating equipment	638,825	76,315	226,755	91,735	3,990	240,030	52,000	139,755	45,725	99,485	77,415
Central heating	525,570	64,005	197,590	83,275	2,935	177,763	18,685	98,045	36,040	31,810	32,745
Coal	229,313	32,820	82,910	27,395	835	85,355	8,600	54,445	17,035	250	6,595
Wood	1,195	225	475	215	15	265	35	145	650	110	2,315
Utility gas	47,435	3,775	19,165	6,515	140	17,840	235	39,890	2,010	30,790	565
Bottled gas	1,295	95	540	260	...	400	65	60	340	185	65
Liquid fuel	232,190	26,180	89,040	46,025	1,910	69,035	9,010	2,870	15,495	40	20,500
Other fuel	10,090	620	3,945	2,350	25	3,150	560	215	415	260	2,430
Not reported	4,050	290	1,515	515	10	1,720	180	420	95	175	275

Types of Nonfarm Dwelling Units, by Type of Heating and Year Built

	Total occupied					Owner occupied		Renter occupied							
	Total	1 dwelling unit, detached	Other 1, and 2 dwelling unit	3 and 4 dwelling unit	5 to 9 dwelling unit	10 dwelling unit or more	Total	1 dwelling unit, detached	All other dwell- ing units	Total	1 dwelling unit, detached	Other 1, and 2 dwelling unit	3 and 4 dwelling unit	5 to 9 dwelling unit	10 dwelling unit or more

Standard Metropolitan Area of Boston, Mass.—Parts of Essex, Middlesex, Norfolk and Plymouth Counties and Suffolk County

All occupied units 632,170 203,090 171,240 147,690 55,425 54,725 278,535 179,115 99,420 353,635 23,975 101,555 121,250 52,730 54,125

HEATING EQUIPMENT

Central heating	511,293	185,306	144,241	94,616	37,809	49,321	252,818	166,927	85,891	258,475	18,379	81,348	73,900	35,904	48,944
Piped steam or hot water	406,742	139,832	112,390	71,809	34,656	48,055	193,054	126,450	66,604	213,688	13,382	63,528	56,120	33,096	47,762
Warm air furnace	104,551	45,474	31,851	22,807	3,153	1,266	59,764	40,477	19,287	44,787	4,997	18,020	17,780	2,808	1,182
Noncentral heating, with flue	84,407	11,124	19,156	38,528	12,635	2,964	17,153	7,736	9,417	67,254	3,388	14,269	34,649	12,068	2,880
Nonctrl. htng., without flue; or not htd.	23,764	3,261	5,511	12,155	3,806	1,031	4,937	2,082	2,855	20,827	1,179	4,377	10,638	3,644	989
Not reported	10,717	3,418	2,327	2,387	1,176	1,409	3,637	2,589	1,248	7,080	1,029	1,563	2,062	1,115	1,311

YEAR BUILT

1945 or later	27,536	18,544	3,083	1,868	1,619	2,422	17,699	17,260	439	9,837	1,284	2,699	1,813	1,619	2,422
1940 to 1944	18,413	11,188	945	750	1,160	4,370	11,142	10,675	467	7,271	513	388	640	1,160	4,370
1939 or earlier	571,682	169,219	163,769	141,810	51,270	45,614	245,188	148,670	96,518	326,494	20,549	95,952	115,949	48,897	45,147
Not reported	14,555	4,147	3,450	3,266	1,374	2,318	4,514	2,520	1,994	10,041	1,627	2,325	2,852	1,052	2,185

Standard Metropolitan Area of Charlotte, N.C.—Mecklenburg County

All occupied units 48,475 31,330 8,785 4,290 1,830 2,240 23,365 21,525 1,840 25,110 9,805 7,245 4,045 1,790 2,225

HEATING EQUIPMENT

Central heating	18,118	12,149	2,102	1,857	945	1,065	11,366	10,635	731	6,752	1,514	1,536	1,734	918	1,050
Piped steam or hot water	5,688	2,319	527	1,248	592	1,002	2,196	2,016	180	3,492	303	459	1,178	565	987
Warm air furnace	12,430	9,830	1,575	609	353	63	9,170	8,619	551	3,260	1,211	1,077	556	353	63
Noncentral heating, with flue	27,249	17,299	6,042	2,199	743	966	11,041	10,102	939	16,208	7,197	5,204	2,111	730	966
Nonctrl. htng., without flue; or not htd.	2,502	1,557	972	213	118	42	797	649	148	1,705	908	459	178	118	42
Not reported	608	325	69	22	24	168	162	139	23	446	186	46	22	24	168

YEAR BUILT

1945 or later	11,977	9,056	1,430	860	455	176	7,673	7,459	214	4,304	1,597	1,238	838	455	176
1940 to 1944	4,094	2,820	507	72	227	468	2,566	2,428	138	1,528	392	369	72	227	468
1939 or earlier	31,223	18,760	6,584	3,335	1,080	1,464	12,770	11,364	1,406	18,453	7,396	5,401	3,112	1,080	1,464
Not reported	1,129	695	265	24	28	117	303	275	28	826	420	237	24	28	117

Types of Nonfarm Dwelling Units, by Type of Heating and Year Built

	Total	Total occupied					Owner occupied			Renter occupied				
		1 dwelling unit, detached	Other 1, and 2 dwelling unit	3 and 4 dwelling unit	5 to 9 dwelling unit	10 dwelling unit or more	Total	1 dwelling unit, detached	All other dwelling units	Total	1 dwelling unit, detached	Other 1, and 2 dwelling unit	3 and 4 dwelling unit	5 to 9 dwelling unit	10 dwelling unit or more

Standard Metropolitan Area of Columbus, O.—Franklin County

All occupied units	135,360	78,390	30,915	13,435	7,305	5,715	72,430	62,565	9,865	62,930	15,825	22,945	12,070	6,980	5,510
HEATING EQUIPMENT															
Central heating	83,628	51,246	17,983	7,838	3,351	3,210	50,710	43,756	6,954	32,918	7,490	12,421	6,800	3,165	3,042
Piped steam or hot water	9,344	3,435	1,440	1,185	1,190	2,094	3,511	2,903	608	5,833	532	1,019	1,021	1,167	2,094
Warm air furnace	74,284	47,811	16,543	6,653	2,161	1,116	47,199	40,853	6,346	27,085	6,958	11,402	5,779	1,998	948
Noncentral heating, with flue	30,375	15,923	7,823	3,154	2,270	1,203	12,680	10,733	1,927	17,693	5,170	6,140	3,017	2,200	1,168
Nonctrl. htng., without flue; or not htd.	4,012	1,232	1,398	487	631	264	721	604	117	3,291	628	1,351	487	361	264
Not reported	17,347	9,992	3,309	1,955	1,055	1,036	8,324	7,455	869	9,023	2,537	2,631	1,764	1,055	1,036
YEAR BUILT															
1945 or later	14,451	11,923	732	1,200	344	230	11,173	10,874	299	3,278	1,031	485	1,148	344	250
1940 to 1944	10,366	7,947	709	817	317	576	7,489	7,316	173	2,877	631	536	817	317	376
1939 or earlier	94,818	53,415	23,941	8,738	4,832	3,892	50,155	41,666	8,489	44,663	11,749	17,131	7,528	4,548	3,707
Not reported	15,720	5,098	5,131	2,681	1,812	998	3,611	2,706	905	12,109	2,392	4,391	2,578	1,771	977

Standard Metropolitan Area of Madison, Wis.—Dane County

All occupied units	38,595	22,140	7,510	4,660	2,365	1,920	21,890	18,230	3,660	16,705	3,910	4,830	3,825	2,260	1,880
HEATING EQUIPMENT															
Central heating	31,863	17,206	6,408	4,111	2,250	1,888	18,194	14,951	3,243	13,669	2,235	4,040	3,350	2,144	1,880
Piped steam or hot water	11,003	3,337	2,114	2,082	1,733	1,737	3,774	2,758	1,016	7,229	579	1,512	1,729	1,680	1,729
Warm air furnace	20,860	13,869	4,294	2,029	517	151	14,420	12,193	2,227	6,440	1,676	2,528	1,621	464	151
Noncentral heating, with flue	5,543	4,032	904	510	97	...	...	2,971	2,666	305	2,572	1,366	655	454	97
Nonctrl. htng., without flue; or not htd.	747	573	152	22	...	...	449	387	62	298	186	90	22	...	...
Not reported	446	331	45	19	32	279	228	31	167	103	45	...	19	...	...
YEAR BUILT															
1945 or later	5,307	4,641	295	86	167	118	4,357	4,262	95	950	379	200	86	167	118
1940 to 1944	2,419	1,897	145	171	112	94	1,525	1,430	95	894	467	50	171	112	94
1939 or earlier	29,845	15,064	6,958	4,289	2,030	1,504	15,631	12,263	3,368	14,214	2,801	4,530	3,454	1,925	1,504
Not reported	1,025	558	113	114	56	205	377	275	102	648	263	50	114	56	165

Standard Metropolitan Area of Oklahoma City, Okla.—Oklahoma County

All occupied units	93,830	66,420	13,245	6,360	5,090	2,715	54,945	50,435	4,510	38,885	15,985	9,885	5,610	4,785	2,620
HEATING EQUIPMENT															
Central heating	30,341	23,864	3,505	1,240	1,001	731	22,554	21,054	1,500	7,787	2,810	2,287	1,022	965	703
Piped steam or hot water	3,541	3,009	706	749	616	461	2,672	2,200	472	2,869	809	345	632	616	447
Warm air furnace	24,800	20,855	2,799	491	385	270	19,882	18,854	1,028	4,918	2,001	1,942	370	349	256
Noncentral heating, with flue	28,671	20,543	3,925	2,204	1,466	533	17,038	15,711	1,327	11,653	4,852	2,978	1,914	1,376	533
Nonctrl. htng., without flue; or not htd.	32,160	20,067	5,484	2,825	2,444	1,340	13,716	12,255	1,461	18,444	7,812	4,402	2,631	2,300	1,299
Not reported	2,658	1,946	329	91	180	112	1,638	1,414	224	1,020	532	216	43	144	85
YEAR BUILT															
1945 or later	35,472	32,491	1,355	666	600	360	30,230	29,940	290	3,242	2,931	1,221	578	532	360
1940 to 1944	15,254	14,125	532	189	342	66	13,374	13,162	212	1,860	965	398	145	308	66
1939 or earlier	34,795	16,360	7,860	4,597	5,721	2,257	4,951	4,722	229	29,844	11,638	7,726	4,597	3,721	2,162
Not reported	8,309	3,443	3,497	907	427	33	6,390	2,612	3,778	1,919	833	340	289	224	33

Standard Metropolitan Area of Tacoma, Wash.—Pierce County

All occupied units	72,675	54,765	5,925	3,900	3,140	4,945	47,515	44,675	2,640	25,360	10,090	4,045	3,475	2,905	4,845
HEATING EQUIPMENT															
Central heating	31,736	22,733	2,035	1,731	1,596	3,641	21,953	20,758	1,195	9,783	1,975	1,200	1,589	1,428	3,591
Piped steam or hot water	8,071	2,592	398	654	957	3,470	2,636	2,245	391	5,433	347	252	593	823	3,420
Warm air furnace	23,665	20,141	1,637	1,077	639	171	19,317	18,513	804	4,348	1,528	948	906	605	171
Noncentral heating, with flue	35,019	28,145	3,073	1,625	1,245	931	22,043	21,136	907	12,976	7,009	2,342	1,483	1,211	931
Nonctrl. htng., without flue; or not htd.	3,831	2,473	538	418	179	223	2,197	1,800	397	1,634	675	329	297	145	190
Not reported	2,087	1,412	278	126	121	150	1,119	978	141	968	434	174	106	121	133
YEAR BUILT															
1945 or later	9,304	8,908	384	136	56	...	7,861	7,745	116	1,643	1,165	268	156	56	...
1940 to 1944	9,352	6,991	1,156	934	538	133	5,828	5,770	58	3,724	1,221	1,098	934	338	133
1939 or earlier	51,519	37,780	4,194	2,395	2,548	4,602	33,078	30,772	2,306	18,441	7,008	2,343	2,023	2,313	4,552
Not reported	2,103	1,088	192	416	197	210	551	390	161	1,552	698	134	363	197	160

What Do You Say?

You are invited to express your views — for publication here — on matters of interest to those concerned with residential air conditioning, warm air heating and sheet metal contracting. Address your comments to the Editor, American Artisan, 6 N. Michigan Ave., Chicago 2

[The first of three sections of a new test code for air cleaning devices was published in American Artisan for September. The purpose of the code is to standardize methods used in determining the effectiveness of both panel and unit air filters. Many letters have been received from those who have studied this section of the code. The following summary of the comments made is presented here for consideration by those who are still studying this code.]

CARL B. ROWE —

"New Code Evidence of Real Progress"

IT IS EVIDENCE OF real progress to see that firms representing the bulk of the manufactured volume of panel type air filters have finally reached an agreement on standardized methods and equipment to be used in rating panel type filters. The complete lack of uniformity in test methods, equipment and dust which are in current use makes it extremely difficult to compare the performance of the various products which are available. Adoption and use of the new AFI code should be a great step forward in easing the problem of comparing the performance of the various types of air filters which are available.

It is my opinion that the strong points of the new code are the use of a vertical test duct, and basing the test results on the entire volume of test air rather than sampling a small percentage of the test air volume.

When horizontal test ducts are used, appreciable quantities of the heavier components of the test dust can settle out before they reach the test filter position. The quantity which settles out varies both with the type of test dust which is used and with changes in air flow velocity. This both alters the composition of the test dust and complicates the problem of accounting for all of the test dust. — The use of a vertical test duct eliminates these problems. — CARL B. ROWE, Research Products Corp.

A. E. DESOMMA —

"Base Efficiency on Weight, Particle Size"

AS A COMPARATIVE basis of evaluation of impingement and strainer type filters to serve the consumer who is not particularly concerned with efficiencies at various particle sizes, dust loadings and other factors, the code as proposed by the Air Filter Institute seems adequate for the average purchaser.

However, the code is definitely lacking in that it does not recognize or give proper weight to filters that do an equally good job on fine particles as another may

do on the larger particles. Perhaps a factor of efficiency based on both accumulated dust by weight and also by micron size would be a satisfactory compromise to all concerned.—A. E. DESOMMA, Senior Engineer, Code 549, Bureau of Ships, Navy Dept.

W. T. VAN ORMAN —

"We Need More Rigorous Air Filter Tests"

TO SUMMARIZE our evaluation of the AFI's new air filter code, we are sorry to state that it does not prescribe tests which are rigorous enough for truly accurate evaluation. Therefore, it does not represent — in our opinion — an improvement in the art of testing filters or help in the art of cleaning air, and the net result of this code will only be additional confusion.—W. T. VAN ORMAN, in Charge of Air Filter Research, Good-year Tire & Rubber Co.

L. L. DOLLINGER, JR. —

"New Code Offers Great Advantages"

OUR COMPANY — after many years of working with air filtration problems — is, along with many others, not in agreement with the current ASHVE code which was written in 1933. The principal reason is that there are too many factors in the use of this code — notably, the sampling of a portion of the air, which does not lend itself to the best results.

The new AFI code, on the other hand, eliminates sampling and many other objections to the old code.

This code represents the experience of major manufacturers, with many years of experience in air filtration problems. We believe it offers great advantages in giving more accurate and positive information to prospective users of air filtration — LEWIS L. DOLLINGER, JR., Vice President, Dollinger Corp.

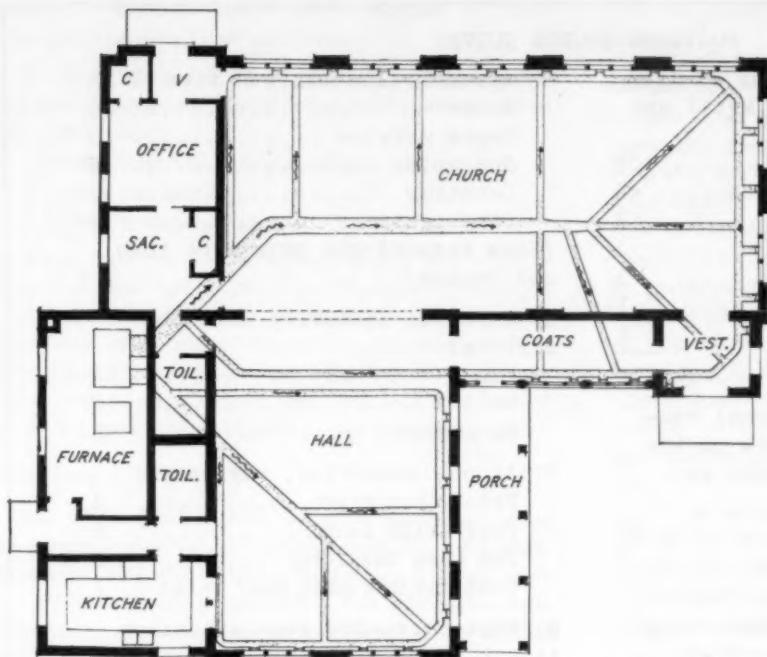
GEORGE F. LANDGRAF —

"Discoloration Test Best Basis for Judging"

I WOULD LIKE to comment on the Air Filter Institute's proposed new code.

Since air cleaning devices installed in buildings are usually used to keep walls, equipment and furnishings clean, a discoloration test seems to be the best basis for evaluation. The discoloration testing method devised by Dill at the National Bureau of Standards (A Test Method for Air Filters, by Richard S. Dill, ASHVE Transactions, vol. 44, 1936, page 379) has withstood the test of time and serves as an accurate evaluation of any type of filtering device. This tester is now commercially available as a portable instrument which can

(Please turn to page 110)



TWO FURNACES are used for zoning purposes. The small one is controlled from the pastor's office, supplies some heat to the church and hall areas. Ducts from small furnace are not shown

Warm Air Perimeter System



COOLING CAN BE ADDED to the heating installation serving the church for complete year 'round comfort in the future

Heats Basementless Church

THE RECENTLY COMPLETED St. Peter's Episcopal church, West Allis, Wisc., is one of the few churches in the country to use a perimeter warm air heating system. The building is a basementless structure — in a climate where temperatures of 25 deg below are not too uncommon.

According to the Rev. Gordon R. Olston, the parish is highly pleased

with the heating system. The building has an area of 4695 sq ft, and is heated by two oil fired furnaces. The smaller unit heats the kitchen, offices, toilets and sacristy (an area of 1180 sq ft).

The total building cost was \$53,760. The heating installation amounted to \$4757 — about \$1 per sq ft of floor area.

All underfloor ducts are galvanized iron, encased in concrete, the tops being set at 2½ in. below the floor. The perimeter duct at the outside wall is 9 in. in diameter. One inch of glass foam insulation was used at outside walls below grade, extending down 2 ft. The main supply duct, with feeder arms extending to the perimeter at several spots, diminishes in size as its length increases.

Zoning the Heating

Two furnaces were used for zoning purposes. The large furnace is used for heating the church proper and for partially heating the fellowship hall. The fellowship hall is made a part of the church during services, but during the week it is frequently divided by a folding partition and used independently. The fellowship hall is supplied from both furnaces. The thermostat for the large furnace is in the parish hall, and the one for the small furnace is in the pastor's office. When the fellowship hall is open to the church and a low unoccupied temperature is desirable, the small furnace, which is controlled from the pastor's office, will supply some heat to the area. This, however, is compensated for by the fact that the large furnace will operate less frequently and control will still be maintained. When the fellowship hall is operated independently, enough heat will be supplied from the small furnace to keep the room warm at the same time that the church is kept at a relatively low temperature.

Cooling Allowed For

The system is installed so that eventually it can be converted to three zones. The outside air intakes are large enough for 100 percent outside air. Cooling can be provided in mild weather by the addition of automatic dampers and controls. Space has been provided for the addition of cooling coils and a compressor.

Air is distributed through slotted perimeter diffusers, which lend themselves to good distribution for cooling when installed.

The church was designed by Lindl-Schutte & Associates, architects-engineers. The heating contractor was the Advance Sheet Metal & Heating Co.

CUSTOMER SOURCE SURVEY

1) How did you first hear of Apex [name fictitious] Sheet Metal and Roofing Co.?	Age and reliability of firm .. 32
Telephone directory	Price 20
Personal recommendation	Rapid service 18
Do not recall	Guarantee 12
Job cards	Location 3
Truck posters	Other reasons 2
Direct mail	(Some respondents gave more than one reason)
Newspaper	6) Were you satisfied with the service?
Total	Yes 102
2) If you heard by personal recommendation, did you look up the number in the alphabetical or classified section?	No 9
Classified	No answer 8
Alphabetical	7) If not satisfied, why not?
Phone number given	Prices too high 3
3) Did you obtain estimates from other dealers?	Roof still leaks 3
No	Job took too long 2
Yes	Does not use good roof paint .. 1
Don't remember	8) What attracted your attention to the company's advertisement in the classified directory?
4) If you obtained estimates, how many did you get?	Words "old established firm" 36
Three others	Size of ad 27
Two others	Words "all types of roofing" .. 17
One other	Attractiveness of ad 13
Don't remember	Words, "free estimates" 11
5) Why did you give Apex the job?	Words "rapid service" 10
Reputation of firm's work	Word "guarantee" 7
40	Words "small orders" 2
	Other features 2
	(Many respondents gave more than one answer.)

MAKING A SURVEY to see how customers answer questions such as these (compiled and used by a large sheet metal and roofing firm) is one way to decide . . .

What's Your Best Advertising Medium?

By Lawrence E. Gichner
Sheet Metal Contractor

TRAVELLING ABOUT the country chatting with my colleagues in the heating, air conditioning, sheet metal and roofing industry, I find they easily fall into two groups when it comes to advertising — those who do and those who don't.

And surprising as it may seem, some of the largest firms are among those who don't. The bulk of their work

they subcontract from general builders to whom they bid direct. They have never spent a penny on the graphic arts. However, there are others whose policy is to spend 2 or 3 per cent, or more, of their yearly volume on retelling old customers and announcing to prospects just what they make and do.

Those who advertise may be divided into two large

groups — those who have a definite program and those who advertise on a hit or miss basis.

To be a successful advertiser (which definitely requires a planned program) a dealer must remember three important "do's":

Advertise truthfully and in good taste.

Advertise consistently.

Advertise to the right people.

When I ask my friends in the industry how effective they find their ads to be, I get the most discouraged replies from those who have overlooked the second point. They were short-sighted because they expected immediate sales from their brief promotion efforts and expenditures. They were thinking of jobs today and tomorrow instead of a long term buildup of their names and organizations.

Choosing a Medium

It is well to avoid generalizing about advertising media on the basis of the individual experiences of a few dealers. One large Philadelphia sheet metal concern has used street car advertising almost exclusively and very successfully for dozens of years, while a firm executive in another city tells me he "threw more than \$12,000 out the window" on this one medium alone. A contractor in St. Louis spent \$5000 on radio spot announcements, and claims that to the best of his knowledge he "never got any of that money back."

Many people feel that though TV may help sell breakfast foods, cigarettes and automobiles, it is questionable whether or not it can promote the sheet metal contracting business to any great extent. Other contractors feel it might be effective, or assert that direct mailings are the most effective means of putting their messages across to prospects. One dealer I know mails a piece a month to 1500 addresses. These addresses are "patrolled" by his salesmen and regularly checked for changes, additions and deletions.

One can see from a study of the yellow pages of the telephone books throughout the country that heating, air conditioning, sheet metal and roofing men advertise very widely in this medium. However, it is the writer's opinion that the overall quality of the layout and in-

formation in these advertisements could be substantially improved.

Should Tailor Ad Programs to Fit

There is no one medium which I have found to be universally accepted. There are those who do — and those who don't — get results from classified ads, newspaper displays, direct mailings, billboards, and telephone book yellow pages. Conditions in different parts of the country vary, and each dealer or contractor must study the problems and situations in his own community. If he hasn't the background or time personally to figure out what are his best media, a professional advertising agency may be the answer.

Some dealers and contractors might want to follow the example (even if on a smaller scale) of a large sheet metal and roofing firm which recently had a survey made as to the source of its customers. While limited in the size of the sample, the survey covered enough cases to give an idea of the value of various advertising media in bringing in new business for this company.

Selections were made at random of jobs completed within one month. Then, 119 customers involved in those jobs were interviewed, with interviewers asking the questions listed in the survey sheet illustrated. The summary answer figures are shown with their respective questions.

Of those interviewed, 58 — or 48.7 per cent — first heard of the firm through the classified telephone directory. There were 45 who said they first heard of it as a result of a friend's personal recommendation.

I am indebted to the owner of this firm (who wishes to remain anonymous) for making available to me the survey results. Caution must, of course, be exercised in applying such results to any one locality, since as we pointed out, conditions vary considerably from place to place.

However, the results may give some indication as to why people choose to call on one firm rather than another for goods and services. The questions may also serve as a guide for dealers who wish to interview their own customers — either formally or informally — in order to determine what their most effective advertising medium or media may be.

Studies Air Pressure Loss in Louvers

LOUVER resistance to air flow was treated by P. R. Cobb, research assistant, Texas, Engineering Experiment Station, College Station, Texas, in a technical paper, Pressure Loss of Air Flowing Through 45 Degree Wooden Louvers, presented at the recent annual meeting of the American Society of Heating and Ventilating Engineers.

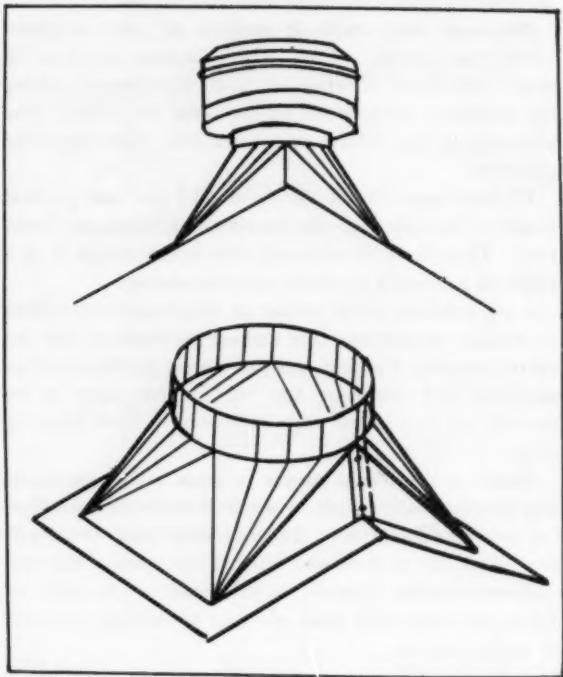
Mr. Cobb used a 24 in. centrifugal fan driven by a 2 hp motor, a plenum chamber, and an outlet duct to conduct his experiments. The fan discharged air to a 7 ft wide plenum chamber, which contained five concentric cone diffusers designed to distribute air uniformly and give the chamber the characteristics of a large room. Con-

nected to the exhaust end of this chamber was a duct having a rounded entrance and measuring 3 sq ft in area and 4.5 ft in length. The various louvers tested were attached to the outlet end of this duct. Air flow was controlled by vanes on the inside of the fan. Air flow measurements were made in two 11 ft long, 13 in. di-

ameter ducts, one equipped with a 6 in. throat nozzle to measure low rates of flow and the other equipped for Pitot tube measurements to measure high rates of flow. Mr. Cobb succeeded in evaluating the effect of different variables of pressure loss in 45 deg wooden louvers which are of common construction.

Making a Ventilator Base for Roof Peaks

A simplified, step-by-step procedure is given for fabricating a sturdy base located on the peak of a roof forming a 60 deg angle



1 THE BASE can be used for gravity type (as above) or power roof ventilators. Pictorial view of the base is shown beneath the application drawing

ONE OF the essential parts of a ventilating system is the ventilator base, which not only must fit the roof properly but also must be able to stand the high pressures created during wind storms. Ventilator bases must also be constructed to absorb the vibrations of mechanical equipment installed either in the ventilator or nearby. This month's pattern problem deals with the fabrication of a ventilator base located on the peak of a roof that forms a 60 deg angle.

The following is a step by step analysis of the simplified method solution to the pattern development:

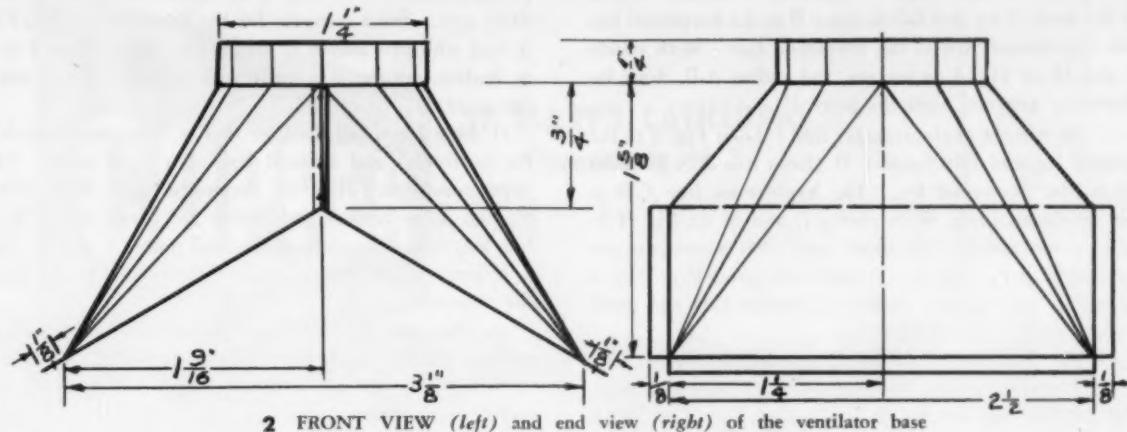
To Construct Simplified Method Drawing, Fig. 3

- a) Draw the vertical center line marked CL and on this line establish the point R. From point R measure $\frac{1}{4}$ in. on the vertical center line and mark the point S.
- b) From point R draw a line perpendicular to the center line, measure $\frac{5}{8}$ in. and mark the point I. From point R measure down the center line $1\frac{1}{8}$ in., marking point P. From point P draw a line at 30 deg to the center line. From point S draw a line at 30 deg to the center line. From point P measure $1\frac{9}{16}$ in. in a direction perpendicular to the center line, and establish point T on the 30 deg line. Designate the distance between points S and T on this line as K. Draw the line I-T and designate this line A.
- c) With point R on the vertical center line as center and radius $\frac{5}{8}$ in., draw a 90 deg arc. Divide the arc into three equal spaces, number points 2, 3 and 4. Through points 2 and 3 draw extended lines parallel to the center line and intersecting line R-I. Designate these intersection points as 3' and 2'.
- d) Working from line R-I, measure the distance $1\frac{1}{4}$ in. which is equal to half the width of the base as shown on Fig. 2, right, and draw a line parallel to line R-I at the upper limit of the $1\frac{1}{4}$ in. distance. Designate this line as X-X. Also extend the line X-X working lines from points 1, 2', 3' and R. Designate the distances from points 1, 2, 3 and 4 on the 90 deg arc to line X-X as B, D, F and H.

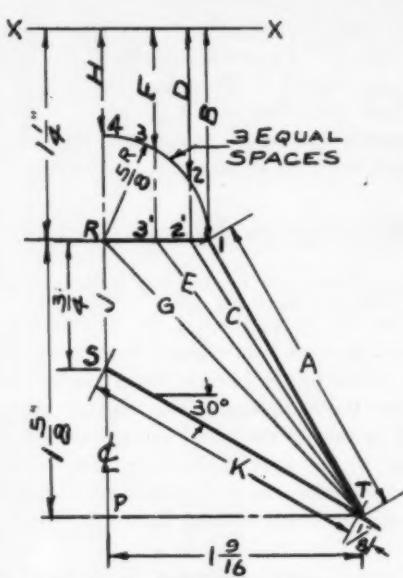
- e) From point T on Fig. 3, draw lines C, E and G to intersect points R, 3' and 2' on line R-I. Mark the $\frac{3}{4}$ in. line R-S with the letter J. From T measure the $\frac{1}{8}$ in. flange as shown.

To Lay Out Half Pattern, Fig. 4

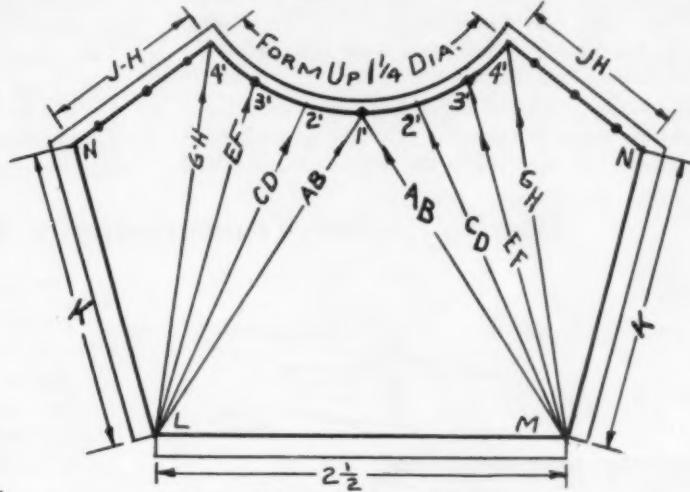
- a) Draw a horizontal line equal to the given base line, Fig 2, right, which is $2\frac{1}{2}$ in., and mark the end points of the line L and M.



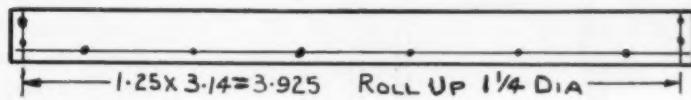
2 FRONT VIEW (left) and end view (right) of the ventilator base



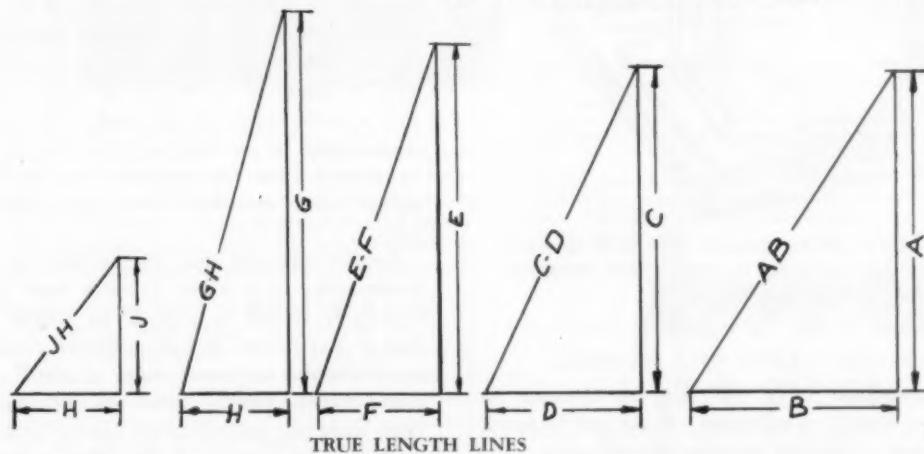
3 SIMPLIFIED METHOD drawing is used in developing . . .



4 THE HALF pattern for the base



5 COLLAR PATTERN — the final step



b) Draw a right angle. From Fig. 3 transfer line A to the vertical leg and fall distance B to the horizontal leg. The hypotenuse A-B is the developed line. With points L and M on Fig. 4 as centers, and radius A-B, draw intersecting arcs and mark the point 1'.

c) On a right angle, transfer line C from Fig. 3 to the vertical leg and fall distance D (from line X-X to point 2) to the horizontal leg. The hypotenuse line C-D is the developed line. With points L and M on Fig. 4 as centers and radius C-D, draw arcs. Set a compass for the length of arc 1-2, Fig. 3, and with point 1' on Fig. 4 as center, cut the arcs made with radius C-D and mark the points 2'.

d) The combination of line E and fall distance F, Fig. 3, on the vertical and horizontal lines of a right angle will produce the developed hypotenuse line E-F. With line E-F as radius and points L and M on Fig. 4 as centers, draw arcs. Set a compass for the length of arc 2-3, Fig. 3, and with this length as radius and points 2' on Fig. 4 as centers, cut the arcs made with radius E-F and mark the points 3'.

e) Transfer line G from Fig. 3 to the vertical leg of a right angle and fall distance H to the horizontal leg. The hypotenuse line G-H is the developed line. With

points L and M on Fig. 4 as centers and radius G-H, draw arcs. Set a compass for the length of arc 3-4, Fig. 3, and with this length as radius and points 3' on Fig. 4 as centers, cut the arcs made with radius G-H and mark the points 4'.

f) Line J and fall distance H, Fig. 3 are transferred to the horizontal and vertical legs of a right angle. The hypotenuse line J-H is the developed line. With points 4', Fig. 4, as centers and radius J-H, draw arcs. With line length K, Fig. 3, as radius and points L and M, Fig. 4, as centers, cut the arcs made with radius J-H and mark the points N.

g) Through the developed points draw the pattern outline and the work lines. From lines N-L, L-M, and M-N, measure the given flange length, which is $\frac{1}{8}$ in., and draw the flange outline.

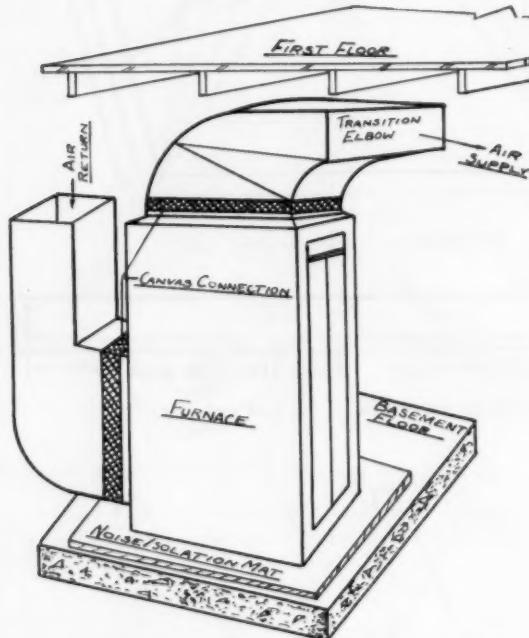
To Lay Out Collar Pattern, Fig. 5

a) Calculate the collar stretch-out by multiplying the given $1\frac{1}{4}$ in. diameter (Fig. 2, left) by the constant 3.14. Thus, 1.25×3.14 equals $3\frac{15}{16}$ in.

b) Draw a rectangle $3\frac{15}{16}$ in. long and $\frac{1}{4}$ in. high, which is the given collar height.

Add allowances for seams and joints, lay out the rivet holes, and mark the patterns for fabrication.

How to Reduce Transmission of Machinery Noise



TYPICAL DEVICES for reducing noise level in warm air heating installations are the flexible duct connection and foundation mat shown here

NOISE TRANSMISSION should be given consideration on all warm air heating installations. Noise can be transmitted through a building structure in two ways:

a) From the equipment into the floor and through the structural supports into other floors and walls.

b) Through the duct (if air velocity is too high).

The problem of noise transmission through the floor can often be solved by the installation of a noise isolation mat under the equipment. This type of mat can be purchased as part of the initial equipment and need not be shown on the working drawing. The common practice is to write it into the job specifications. Various types of other vibration isolating equipment are also available.

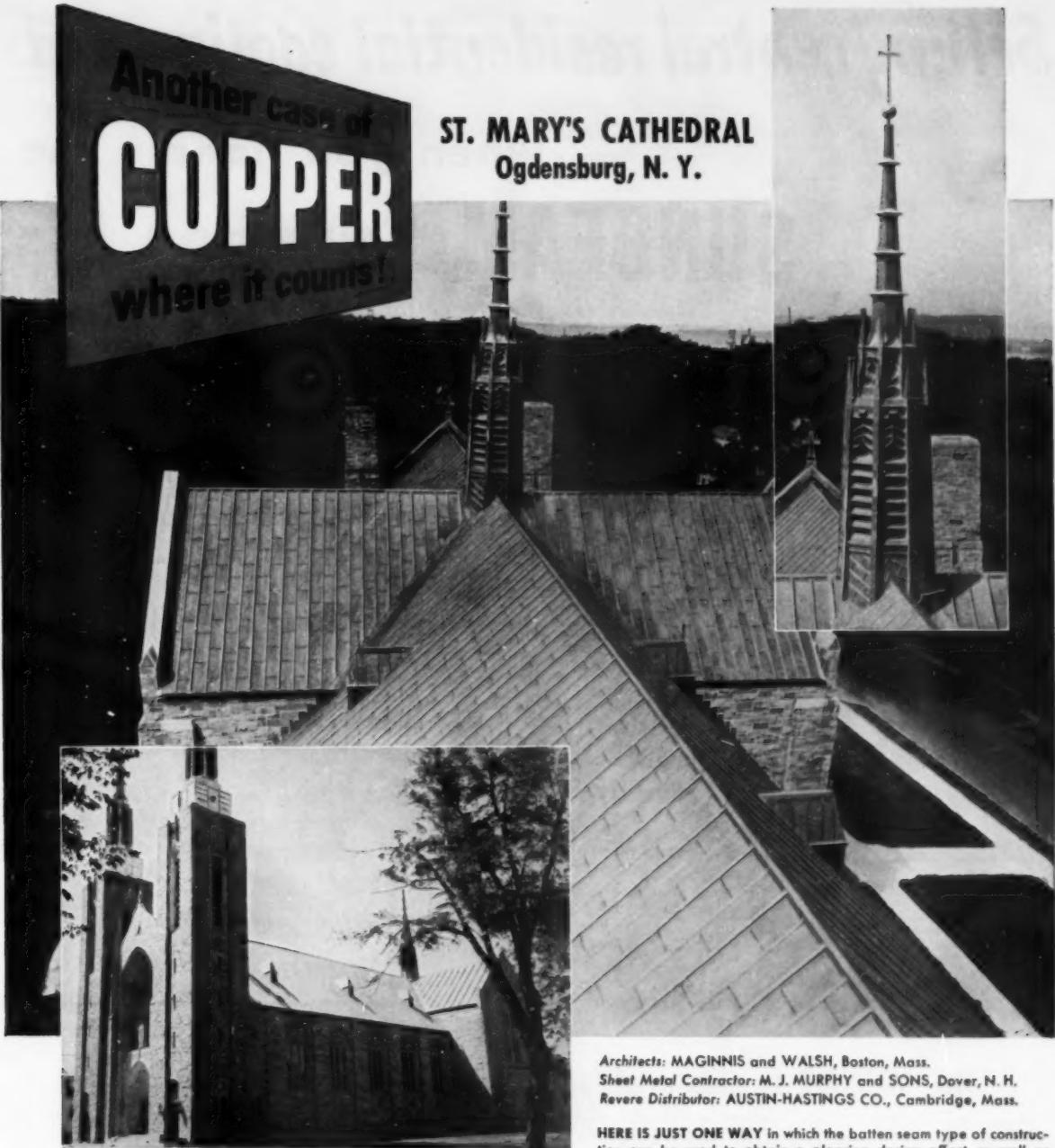
Some airborne noises are caused by faulty design of the system. Air velocities should be kept low enough to prevent any annoying whistle.

Noise transmission through the ducts from the air handling equipment can be prevented by providing an approved flexible sound isolating connection between the equipment and the ductwork. This connection may be made of a canvas or other type of fabric with a metal collar at each end. Not less than 1 in. slack should be allowed to insure that no vibration is transmitted from the equipment to the ductwork. A typical canvas connection with metal collar is shown at left.

Another material that can be used to reduce noise transmission is a woven asbestos tape that has been chemically treated to provide an airtight joint. This tape is also treated to have adhesive properties and to stand constant air temperatures of 200 F. It has been found that sheet metal collars are not required in many cases since the treated fabric can be joined to the two duct ends by taping with the adhesive material.

Another case of
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where it counts!

ST. MARY'S CATHEDRAL
Ogdensburg, N. Y.



When we asked the sheet metal contractor about the batten seam roof and the spires they installed on St. Mary's Cathedral they said: "We were pleased that the architects specified a batten seam roof of copper because from our past experience with copper we knew that we could turn out a job to be proud of. And, as any sheet metal man will tell you, copper is the ideal metal to work with. It solders beautifully, can be bent and cut to any shape you want."

Protect your reputation. Give your jobs the many benefits of Revere Copper. See the Revere Distributor nearest you about Revere Sheet, Strip or Roll Copper for flashing and roofing. Particularly ask him about the money-saving advantages of Revere Keystone Thru-Wall Flashing* and the new Revere Keystone 2-Piece Cap Flashing.** And, if you have technical problems, he will put you in touch with Revere's Technical Advisory Service.

*Patented **Pat. Pend.

Architects: MAGINNIS and WALSH, Boston, Mass.
Sheet Metal Contractor: M. J. MURPHY and SONS, Dover, N. H.
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HERE IS JUST ONE WAY in which the batten seam type of construction can be used to obtain a pleasing design effect as well as creating a roof that will endure for years and years. Installation was made in accordance with recommendations in Revere's Booklet, "COPPER AND COMMON SENSE." Send for a copy today.

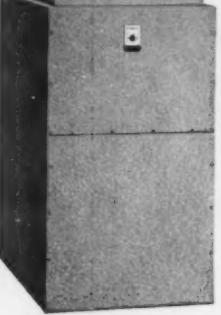
34,000 LBS. OF ENDURING, NON-RUSTING REVERE SHEET COPPER were used for roof, flashing and spires on St. Mary's Cathedral. 27,000 lbs. was 20 oz. Lead Coated and the balance was 16 oz. plain copper.

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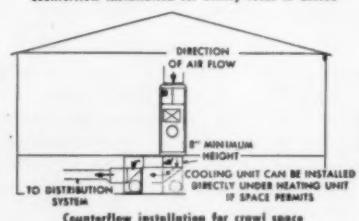
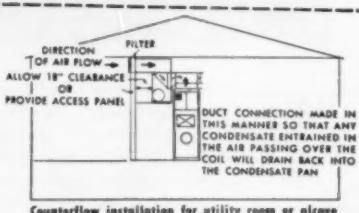
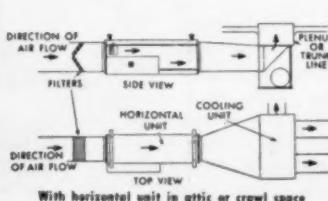
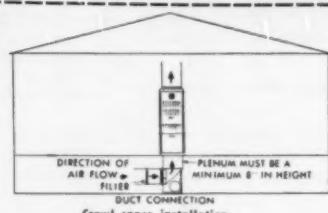
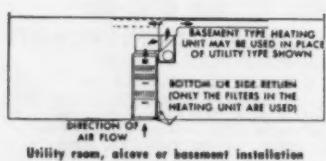
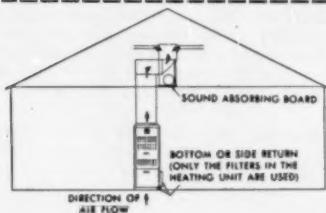
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You can sell the Mayfair for installation with the quality built units in the American-Standard Sunbeam line, or any other approved forced warm air furnace. Model HC-200 is shown here alongside the gas-fired Seneca. Using the same ductwork, it can be installed quickly.

Here you see a Mayfair model HCA-2F with a matching gas-fired or oil-fired winter air conditioner. Available in 2 and 3 hp capacities, this smartly designed unit, like other Mayfair models has the famous "Humid Weather" control which automatically holds the indoor humidity and temperature just right for summer comfort. Model HCA-2, without fan, shown above, center.

THE MAYFAIR is also available without jacket for jobs like these



heating gives you a year 'round business versatile line of Conditioners by American-Standard

• The residential summer air conditioning picture is changing. And fast! Public demand is swinging sharply from individual room cooling to the more efficient and more practical central system for conditioning the entire home.

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Yes, there's a real opportunity for you in handling the American-Standard Sunbeam line. Especially, if you sell Sunbeam Winter Air Conditioners. For example, every home in which you've previously installed forced warm air heating equipment is a prospect for Sunbeam's new Mayfair Summer Air Conditioner. And you'll find it just as easy to interest your new heating customers in a matching summer air conditioner which you can install when you put in his furnace, or at any time later. This is a strong argument when figuring on new construction, for it enables the architect or builder to plan for present or future summer air conditioning.

Thus, you see, handling the top quality line of Sunbeam Summer Air Conditioners in conjunction with warm air heating makes yours a steady, non-seasonable business. You're selling 12 months of the year. And making money with every installation!

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The new Mayfair summer air conditioners are self-contained units with hermetically-sealed refrigerant circuits.

These efficient cooling units are available in 2, 3 and 5 ton (or hp) capacities for virtually any kind of home installation.

The hermetically-sealed refrigerant circuit in each unit is resiliently mounted for quiet operation, less vibration and longer life of unit.

The evaporator is designed to dehumidify as well as cool the air passing through it.

"Humid Weather" control allows extra moisture to be removed from the air without over-cooling on days when humidity is exceptionally high.

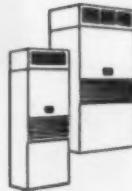
Units are assembled at the factory and are ready for operation as soon as set up with required electric, water, drain and duct connections.

Hermetically-sealed refrigerant circuits carry 5-year protective guarantee.

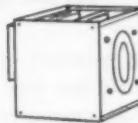
FOR MORE INFORMATION . . . If you're interested in selling the finest summer air conditioners on the market, we suggest that you get in touch with your nearest Sunbeam distributor at once. Look under "Air Conditioning Equipment & Supplies" or under "Furnaces" in the yellow pages of your telephone directory. **Sunbeam Air Conditioner Division, American Radiator & Standard Sanitary Corporation, Bessemer Building, Pittsburgh 22, Pa.**

AND COMMERCIAL UNITS, TOO!

The commercial Mayfair models—available in 2, 3 and 5 ton capacities—are similar to the residential units, offering the same hermetically-sealed refrigerant circuits. They can be used singly or in multiples. Ideal for shops, restaurants, offices and similar spaces. Listed by Underwriters' Laboratories.



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Cooling Unit Is No "Nuisance"

By Albert W. Gray



"A properly functioning air conditioning unit does not constitute a public nuisance," ruled the court in a recent decision, pointing out that noise levels and other comfort standards are matters of degree and vary with the locality

A RESIDENT of a large city installed an air conditioning unit that was in operation 24 hours a day. It was the size commonly used for residences, of standard manufacture and in proper working condition. Neighbors brought charges against the owner of this equipment for maintaining a nuisance.

The principle of law involved in this controversy has been stated by one writer as, "I have a legal right to swing my arms but that right ends where the next man's nose begins."

The court — in its consideration of not only the rights of those complaining that they had been disturbed but also the rights of the owner of this equipment to enjoy air conditioning — said:

"These cases invariably involve two general but conflicting principles of law — the right to use one's property as one sees fit and the duty to refrain from using one's property in such manner as to produce injury to others."

The court here referred to a case of this character involving a dance and amusement hall and the principles of law there involved, in which it was held that those

who were disturbed were entitled to an injunction against the disturbance.

"Long ago it was adjudged that one dwelling in a city who with the aid of a speaking trumpet made great noises in the night time to the disturbance of the neighborhood, must answer to the king. We think the area of this tumult, the range of its disturbing power, is wide enough to bring it within the category of the offenses to the community. Here is a tumult so great as to be a plague to the whole neighborhood."

A Question of Degree

The same determination was made a few years ago in relation to the noises from a popular city restaurant. In granting the injunction against these disturbances the supreme court of the state said:

"With changing social conditions, and in complicated urban life especially, the law must adapt legal principles to meet newly arising necessities. The patrons of this restaurant have a right to gaiety and music and its neighbors have an equal right to the quiet enjoyment of their homes and to sleep. Where does the right of the former end — and the right of the latter begin?"

In an effort here to follow a philosophic middle course, the court merely restricted the playing of the music in this restaurant to specific hours. These decisions both follow the law laid down by a court of appeals half a century ago in an action brought to prohibit the use of soft coal in the operation of a gas plant. The court in that case said of the law governing circumstances of this character:

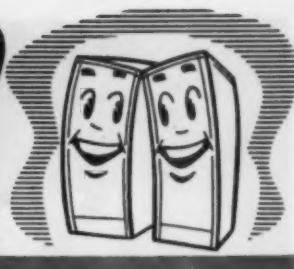
"The law relating to private nuisances is a law of degree, and usually turns on whether the use is reasonable or not under all the circumstances. No hard and fast rule controls the subject, for the use that is reasonable under one set of facts would be unreasonable under another."

"Whether the use of property by one person is reasonable, with reference to the comfortable enjoyment of his own property by another, generally depends upon many and varied facts, such as location, the nature of the use, the character of the neighborhood, the extent and frequency of the injury and the effect on the enjoyment of life, health, property and the like.

(Please turn to page 112)

*Albert W. Gray, author of this article, has had over 20 years' experience as an attorney in the courts of New York City. He has written widely on legal matters and is the author of *The Family Legal Adviser*.*

Catch your eye?

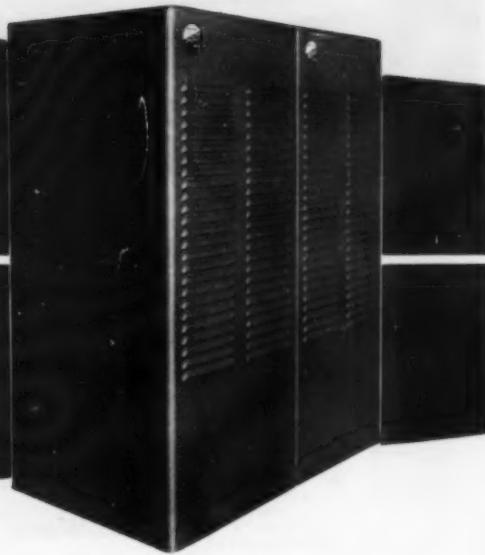


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TO RETAIN articles of special interest to him, the author first clips them, then punches them (*left*) to facilitate insertion in a manila folder, and files them. Recently published articles are used directly from the magazine (*right*), since no article is filed until a year after its publication

by filing articles from Artisan . . .

Dealer Keeps

- Warm Air Heating
- Residential Air Conditioning
- Sheet Metal Contracting

Ideas on Tap

By Joseph H. W. Schlue

Heating, Air Conditioning and Sheet Metal Contractor
Cape Girardeau, Mo.

IN EACH issue of the American Artisan there are articles which heating, air conditioning and sheet metal men like to have around permanently for handy reference. However, with office, shop and living space at a premium, it usually is out of the question to store all back issues. To save space and to facilitate rapid on-the-job reference, I have devised a method for filing articles when they are a year or more old. (I find it useful to keep the complete issues — after I have read them — on hand for at least one year).

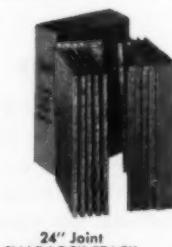
For purposes of filing, articles are categorized under the headings "heating," "ventilating," "cooling," "sheet metal," "pattern development," "management," and "legal." I have found these headings to be useful for rapid reference, and they seem to cover most of my major business needs. However, other firms will, of course, set up their own categories depending on the type of work they do.

In general, I file articles covering these subjects when they deal with recent experiments in heating or cooling,

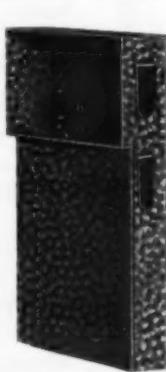
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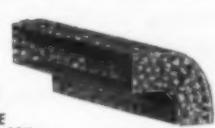


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FURNACE PIPE AND FITTINGS

innovations in business techniques which I feel might be applicable to my firm, relevant experiences of other warm air heating and air conditioning dealers, etc. I am especially careful to file any material which can help me to streamline my business procedure (saving time, material, etc.) From time to time I review the entire file and articles which I consider "dated" are removed.

Also Files Ads

Since advertising is a valuable source of information in itself, ads often are filed along with the various articles on the subject covered. I am especially interested in filing ads on types of metals, ads which contain information on fabrication methods which have been time tested and methods which are new.

I always retain the yellow pages of the Directory issue (January) for future reference in case I wish to find out about or order a product for which I have no ads or manufacturer's data on file. Since this section is indexed as to materials and manufactured items, in most instances it provides the needed information. If more information is desired, in many cases it can be found by reference to any of the current issues (which are still intact). If information cannot be found in current ads, the Directory Section, of course, provides a

choice of manufacturers' addresses to write for more data.

Separation Process Simple

As to the physical process of disassembling the magazine for filing — it is rapid and simple. When the staples are removed, it will be found that the magazine separates into individual sections. I separate those items to be kept for future reference from their sections by slitting the pages with a letter opener or knife.

I then punch these pages with a round punch, available at most variety stores, and then assemble the pages to fit into a manila cover, binding them with tack type clips.

Articles are filed in sequence according to month within the manila folder for each year. The page numbers follow in numerical sequence. When the file for one year is complete, a typewritten page containing the headings of the articles selected is inserted as the first or index page. This page serves as a reminder when I am looking for articles on a certain subject, saving "thumbing through" time.

I feel this filing system can be useful to any dealer wishing to keep up-to-date in his information on any of the areas — sheet metal, heating or air conditioning — covered by the American Artisan.

PERIMETER HEATING —

(Continued from page 63)

ous types of systems have been developed and are presented in Manual 4, Warm Air Perimeter Heating as Applied to Structures without Basements (3rd ed.), of the National Warm Air Heating and Air Conditioning Association.

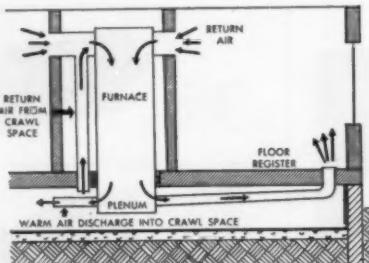
Perimeter Systems Effective

The question naturally arises as to whether the perimeter systems have proven effective. The results from the field investigation committee seem to indicate that in a properly designed, installed, and adjusted system the following features become evident:

Introduction of warm air below windows and near exposed walls minimizes stratification and also counteracts the cold air currents falling down the windows to the lower part of the room.

Floor surfaces can be made warmer if the crawl space temperature is increased.

Any heat loss from the ducts in



3 IN CRAWL SPACE perimeter heating systems, a downflow furnace is used and the warm air is discharged from the furnace into a plenum located in the crawl space

the crawl space tends to warm the crawl space.

Properly designed registers and diffusers for perimeter heating minimize the risks of excessive air motion in the occupied spaces.

The principle of continuous air circulation is also important for perimeter heating systems.

Registers and diffusers are commercially available for perimeter warm air heating.

In the next issue a discussion will

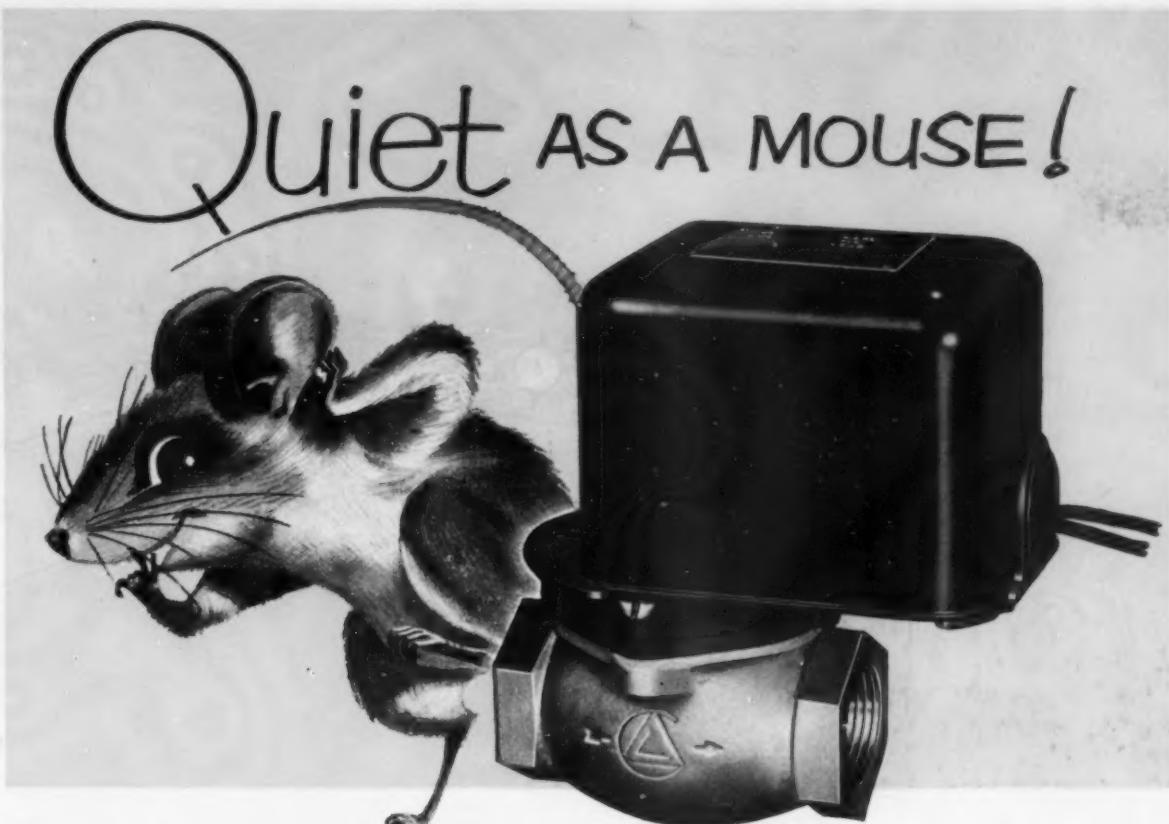
be presented of crawl space construction as it relates to the heating of the house.

INDUSTRIAL ATOM SMASHERS

A NEW TOOL for industrial progress, which utilizes stainless steel, has become available with the recent government decision to release atomic energy to private industry, according to American Iron and Steel Institute. Small atom smashers with stainless steel parts and accessories are already at work in some industrial laboratories.

One of the reasons stainless steel is used in nuclear laboratories is that it has a hard, dense surface not readily contaminated by radioactivity, the institute states. The steel can be cleaned of radioactive contaminants with nitric acid, which is also a good solvent for uranium. The corrosive action of the acid does not affect the steel adversely.

In the atom smashing equipment, chromium-nickel stainless is used because of its non-magnetic properties and its strength.



DETROIT V-579 "BI-FLEX"

*The Quiet-Acting GAS VALVE—Performance Proven
for Reliable Service on Thousands of Installations!*

Check These Features

- Quiet operation—no click, no hum
- Rugged, compact—easy to service
- Inexpensive
- For all gases in all localities
- "Bi-flex" motor operated—low voltage
- Compensated for changes in ambient temperature
- Snap-acting opening and positive closing
- $\frac{1}{2}$ -inch to $1\frac{1}{4}$ -inch sizes

Here is a gas valve which is actually quiet in operation! Its strong "Bi-flex" motor provides unfaltering opening and tight shut-off closing with absolutely no annoying, worrisome bangs, clicks or hums. Thousands of installations have proved its unsurpassed reliable, trouble-free performance. Simple in design, positive in operation, the V-579 operates independently of gas pressure and is available in sizes to fit any domestic heating system. Write today for Bulletin No. 229.



DETROIT
CONTROLS Corporation



8900 TRUMBULL • DETROIT 8, MICHIGAN

Division of American Radiator & Standard Sanitary Corporation

NO. 411—the sensitive and accurate *Timed Cycling Thermostat* for all types of heating systems. Provides close control of room temperature. Attractively styled, easily installed and adjusted. Write for Bulletin No. 193 and Form No. 1545-A.



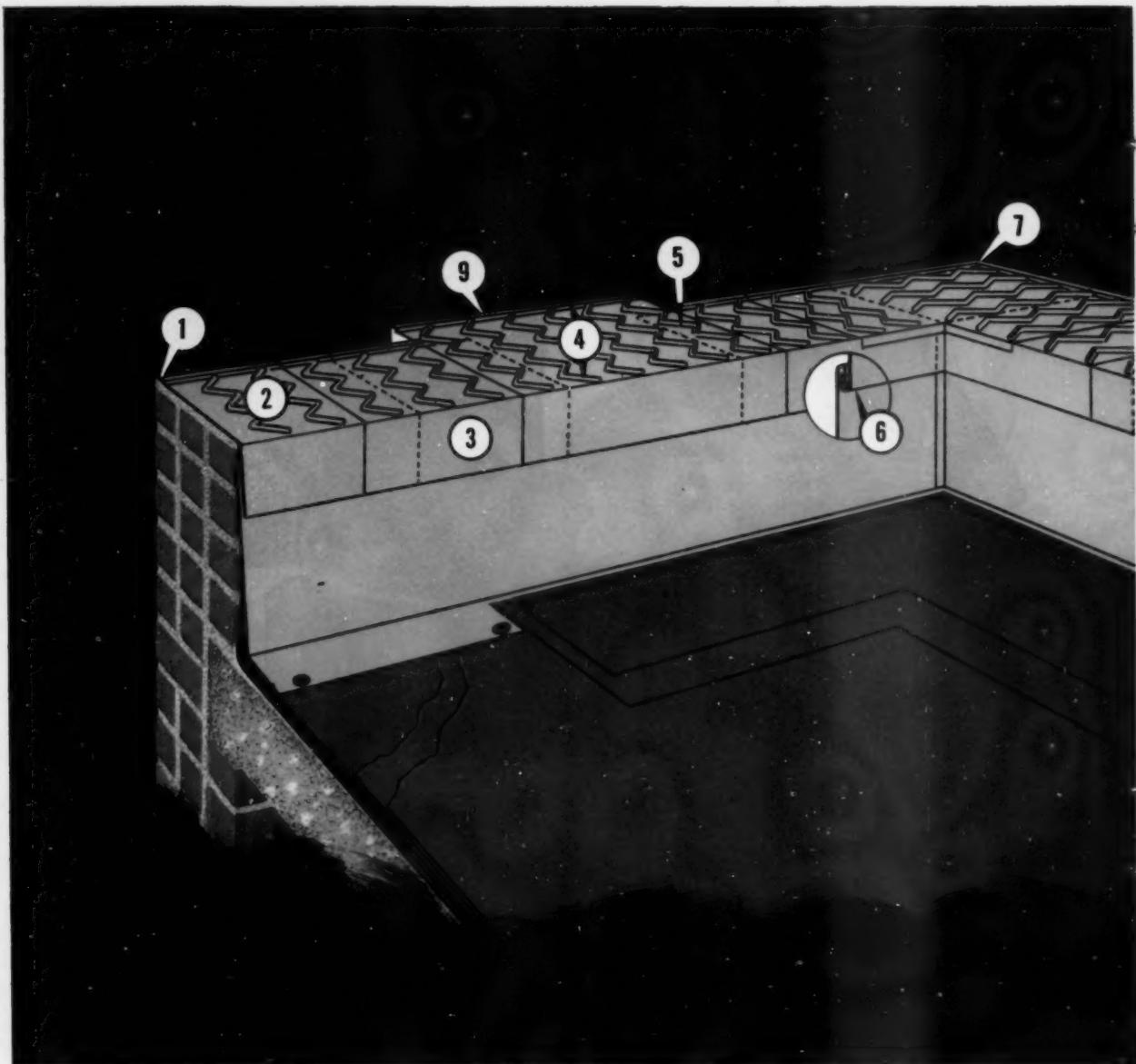
Representatives in Principal Cities • Canadian Representatives in Montreal, Toronto, Winnipeg—Railway and Engineering Specialties, Ltd.

AUTOMATIC CONTROLS for REFRIGERATION

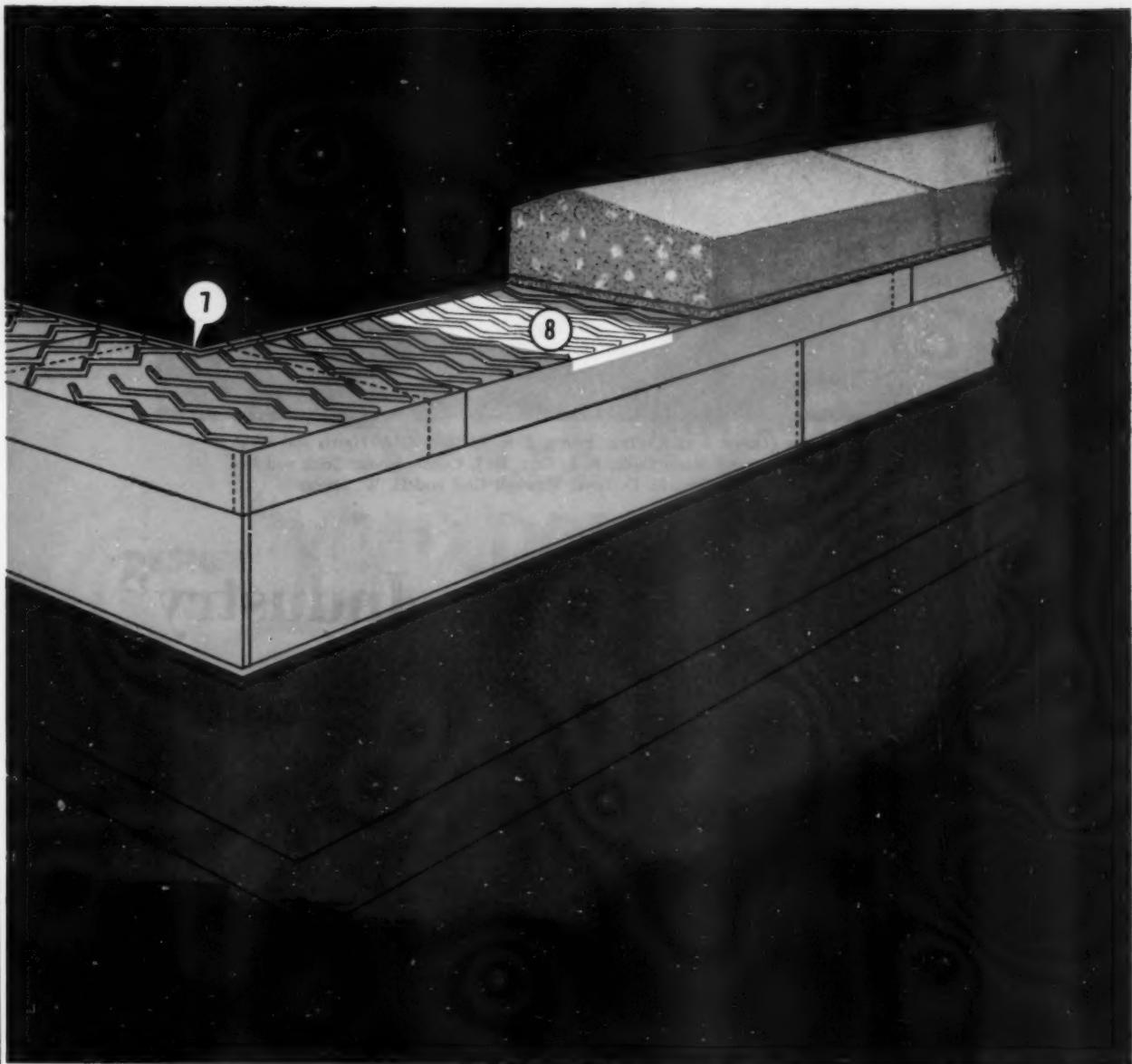
AIR CONDITIONING • DOMESTIC HEATING • AVIATION • TRANSPORTATION • HOME APPLIANCES • INDUSTRIAL USES

Serving home and industry

AMERICAN STANDARD • AMERICAN BLOWER • CHURCH SEATS & WALL TILE • DETROIT CONTROLS • KEWANEE BOILERS • ROSS EXCHANGERS • SUNBEAM AIR CONDITIONERS



**You get the protection of sound engineering
with ANACONDA® Through-Wall Flashing**



1. Positive interception of downward water flow

Pre-formed dam of special design permits positioning to within $\frac{1}{4}$ " of the face of the wall.

2. Prevents lateral movement

The $\frac{7}{32}$ " high embossed zigzag corrugations provide a positive bond with the mortar on both the top and bottom of the flashing.

3. Flat, integral, easily bent counter flashing

The counter flashing portion is furnished without corrugations. Bending does not overstress metal or form a bead at the bend.

4. Complete drainage in desired direction

The die-stamped dam and corrugations of uniform height assure complete drainage on a level bed. The smooth edge on the

drain side cannot trap water. There is no danger of heaving by frost.

5. Accurate nesting

Precision die-stamping assures tight nesting of dam and corrugations when overlapping adjacent lengths.

6. Flat selvage for easy joining

No problem to clinch-lock or solder to other copper work.

7. One-piece die-stamped corner flashings

Available for inside and outside corners for 8" and 12" walls. Interlock with adjoining straight lengths. Corner flashings are installed quickly and with a normal thickness of mortar joint.

8. Protection without waste

A pound of flashing (16-oz.) covers a full square foot area.

9. Wide range of sizes

Available up to 47" wide over-all, with corrugations and plain selvages of variable widths. All in standard 8 ft. lengths.



FREE! Publication C-28, "ANACONDA Through-Wall Flashing," tells how to use adequate flashing of efficient design. Twenty-seven illustrations make every point crystal-clear. For your copy, write to: *The American Brass Company, Waterbury 20, Connecticut. In Canada: Anacconda American Brass Ltd., New Toronto, Ont.*

5347

good construction demands

ANACONDA®

Through-Wall Flashing



OFFICERS for 1954 are (seated, *l. to r.*) Tom Ewing, J. R. Walker, R. A. Harris and Frank Anderson; (middle row, *l. to r.*) Merle Daily, E. L. Carr, B. J. Currie, Homer Selch and Ben Flock; (top, *l. to r.*) Don McCloskey, H. D. Boyd, Maxwell Goff and H. W. Meggs

“Advancement of the Industry”

... the slogan of Indiana dealers and contractors was put into action at their annual meeting where discussions covered comfort, cooperation, new markets, merchandising

THE SLOGAN of the Sheet Metal and Warm Air Heating Contractors' Association of Indiana is "Advancement of the Industry." Using this as the theme for their 36th annual convention, held February 4-5 at Indianapolis, the members of the convention program committee presented two days that were filled with information about new approaches to the solution of industry problems and ideas about new business opportunities for the near future.

The business session was climaxed by the election of officers for the coming year: Russell A. Harris, president; Don McCloskey, first vice president; V. Hazelton, second vice president; James R. Walker, treasurer; and Frank E. Anderson, secretary. New directors who will serve two years are H. M. Daily, J. W. Ridgway, T. B. Speaker and L. W. Widney. Directors for one year are B. J. Currie, Wm. E. Garber, Jr., Maxwell Goff and H. W. Meggs. Sergeants at Arms are Ben Flock and Harold Boyd.

What Factors Produce Comfort?

The importance of maintaining narrow temperature gradients between the floor and ceiling of a room was

emphasized by Lorin G. Miller, technical consultant for the National Warm Air Heating and Air Conditioning Association. Dean Miller said that temperature gradient tests have been conducted in a number of universities and laboratories, with results proving comfort to be closely associated with even room temperatures kept within recommended limits. The findings revealed that the temperatures of the normally exposed portions of the body (hands, arms, feet and legs) are lower than those of the other parts of the body — in some cases by as much as 15 F. The exposed portions of the body were also found to be the areas from which most of the heat was dissipated. The conclusion was that the temperature of the surrounding air is directly related to the rate at which these exposed portions dissipate their heat, thus affecting the sensation of comfort.

Good control of room air temperature gradients is only one of the essentials of comfort, Dean Miller continued. The temperatures of walls, floor and ceilings are related to the rate at which the body radiates its heat loss. He said that, even with fairly even floor to ceiling temperature gradients, a person would feel uncomfortable if the exposed portions of his body radiated



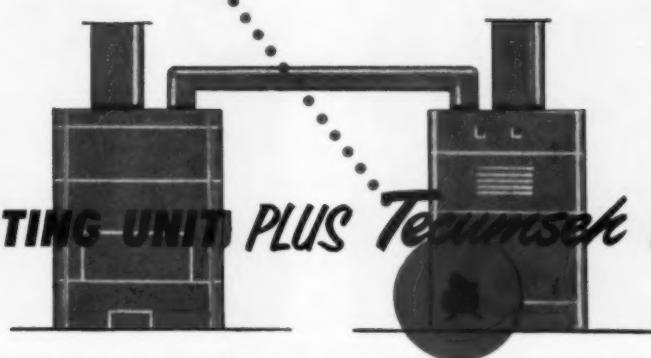
IT'S HERE
TO HELP YOU
MR. FURNACE
MANUFACTURER

DESIGN

"YEAR-ROUND"

AIR CONDITIONING

YOUR HEATING UNIT PLUS Tecumseh HERMETIC



With the introduction of Tecumseh's new line of large hermetics, your engineers can now design a summer air conditioning unit that can be sold as a package unit with your present line of oil or gas fired winter air conditioners.

Designed right and priced right these Tecumseh completely sealed Twin Cylinder Hermetics are available for 1, 1½, 2 and 3 H.P. applications. The Tecumseh hermetic, in a properly designed system, assures you of the most economical and efficient system available.

Economy, freedom from service problems and

efficiency are some of the reasons why the Tecumseh Hermetic is incorporated into the majority of room coolers. These same advantages apply to the integral H. P. compressors for year around applications.

Why not get a head start in this new market by offering your dealers a complete . . . heating and cooling . . . air conditioning unit?

Our Tecumseh representative in your territory will be pleased to give you all the facts about these Tecumseh Hermetics, simply write or call us today and he will contact you immediately.



There are over 1,000,000 Tecumseh units in use throughout the world. Tecumseh is the world's largest producer of condensing units for the refrigeration industry.

TECUMSEH PRODUCTS

TECUMSEH, MICH.

Company

EXPORT DEPT.: 2111 WOODWARD AVE., DETROIT, MICH.



H. M. DAILY (left) and F. E. Anderson (right) enjoy some pre-speech remarks by Lorin G. Miller just before he addresses the meeting on advances in warm air heating



H. W. MEGGS, chairman of the public information committee of the Indiana association, explains to members the current program and demonstration being conducted before social and technical groups and sponsored by the association



IN REGULAR HOOSIER STYLE, Mr. and Mrs. W. H. Tudor (left) of Indianapolis make Mr. and Mrs. Graham D. Woodhouse of Dowagiac, Mich., feel at home



HOMER SELCH (left) shows C. O. Stauffer (center) and L. W. Widney the gold watch he received for association service

too much heat to cold surfaces. Conversely, if the radiation process were reduced below the normal rate due to wall, floor or ceiling surfaces being warmer than the human body, comfort would be affected.

Humidification — as another element that contributes to the comfort of humans — has been under study. It is known that the average person will evaporate about 1/10 lb of water per hr. If this rate of evaporation is varied due to the amount of moisture in the air, comfort will be impaired. Thus, there is a need for humidification during the winter and dehumidification during summer months in most climates.

Another important factor related to comfort is the rate of air motion. A few years ago, Dean Miller related, it was common practice to size residential warm air heating systems for six air changes per hr — but this was found to be too high a rate with methods of

air distribution then being used, as evidenced by the number of complaints of drafts, he said. To overcome this objection, the air flow rate was decreased until about three air changes per hr was accepted as standard practice. With the advent of perimeter heating and the accompanying air distribution patterns, it has become desirable to increase the rate of air changes, he said. Currently, tests are being conducted in which as many as 10 air changes per hr are being used without any indications of drafts or noticeable effects of discomfort. It is entirely possible that the results of these tests may become standard practices for residential applications within the next few years, said Dean Miller.

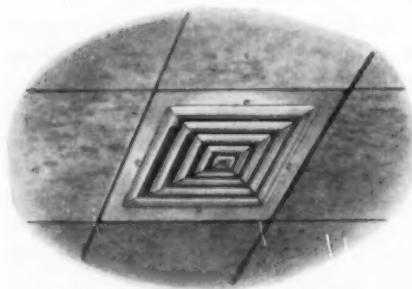
Joint Effort for Eight-Point Program

Joseph D. Wilder, executive secretary of the Sheet Metal Contractors' National Association, pointed out

**The New Lima Extended
Baseboard Perimeter Diffuser**



Beautifully styled and easy to install, this new Lima extended baseboard perimeter diffuser delivers air upward and outward at reasonably high velocity at proper angles for peak efficiency. Aspirating effect pulls air from within room toward outer walls without being noticed. In a new house, unit is set about $\frac{3}{4}$ " into wall with little protrusion beyond baseboard. Face is removable. In remodeling work unit butts up against wall or baseboard.



See how this modern square design harmonizes with rectangular rooms and square block ceilings. Series of step-down vanes discharge air outward and slightly downward in all directions without drafts. Recommended for return air — especially in perimeter installations — eliminating large, unsightly grilles. Damper delivers air through full center opening for more complete 4-way diffusion.

**The New Square Design
Lima Ceiling Diffuser**

*2 new diffusers in
the Lima quality line*

Again Lima leads the way with advanced styling and engineering in perimeter diffusers for more attractive installations and more effective air diffusion in heating or cooling . . . remodeling or new house construction.

The new Lima Extended Baseboard Perimeter Diffuser is smartly attractive and blends beautifully with any baseboard. Assures effective air diffusion without drafts . . . will handle any standard perimeter installation for heating or cooling. Exclusive mechanical built-in damper has set screw control adjustment at the face. Immediate delivery in standard four foot and two foot sizes.

The new Square Design Lima Ceiling Diffuser gives greater free area with full center damper opening. Damper closes tightly for full heat shut-off. Exclusive "balancing bell" feature simplifies balancing and puts volume control right in the diffuser. Modern light beige actual finish. Immediate delivery in six sizes.

See your local Lima jobber or write direct for complete details, and a copy of the new Lima catalog.



Lima
register company

Lima, Ohio

sold exclusively through heating wholesalers and manufacturers



Wall Diffuser



Floor Diffuser



Wall-O-Way



Floor Register



nationally
advertised
to architects
and builders

that by working together with other groups, the warm air heating, air conditioning and sheet metal contracting industry could continue to improve its position in our national way of life and at the same time provide its customers with higher quality products and workmanship. Mr. Wilder made eight points that could be followed to help achieve such a goal. First, he urged members to work for legislation — both national and local — that will prevent discrimination against any trade or industry. Becoming more specific, he urged — as his second point — support of the movement in Indiana for a state bidding law similar to those now being considered in Congress that would protect the subcontractor from the various unethical practices of some general contractors.

Making his third point, Mr. Wilder called for unification against what he termed "unfair" requirements recently included in the minimum standards of the Federal Housing Administration. This government agency has recently required that the gage number be embossed upon all gutters, valleys, troughs, flashings and similar sheet metal products.

Mr. Wilder's fourth point was that local and state associations should join in the activities being carried on by the Chamber of Commerce on both local and national levels. This group, Mr. Wilder said, is a good source of information for the progressive dealer or contractor to use in making business plans.

Point five was a suggestion that the warm air heating dealers throughout Indiana go after "every schoolhouse heating contract." Mr. Wilder reminded the association that mechanical ventilation is required by law and it is far better to work as the prime contractor than as a subcontractor on work that belongs to the sheet metal industry. He said that the size of the school should have nothing to do with whether or not a bid should be submitted, emphasizing that school heating (be it a one room or a 20 room school) is practically the same problem except for the furnace capacity needed.

In his sixth point, Mr. Wilder dealt with the development of educational sessions, stating that young men entering the industry need to be trained in its essentials and that experienced members also should attend these sessions so that they may keep up with modern business techniques.

Point seven was a suggestion that a closer association be developed with consulting engineers and architects, many of whom, Mr. Wilder said, are not familiar with either the scope of the services that can be performed by the sheet metal contractor or the versatility of warm air heating equipment (which can be used in multiple units). Developing friendships with them can help dealers and contractors convince them to include all of the specifications that fall within the limits of the heating, cooling and sheet metal field in the original set of specifications and plans.

Last, Mr. Wilder urged a stronger effort toward better public relations. He said that many warm air heating, air conditioning and sheet metal dealers and con-

tractors are "modest fellows" who go quietly about their business and fail to let people know how good a job they can do. A stronger effort should be made to tell the public about some of the advantages which have resulted from the numerous quality installations made, he said. This will give the industry deserved recognition, he pointed out.

Farm Market Promising

When looking for new markets for heating and cooling products, the farm market should not be underestimated, said Professors F. N. Andrews and W. E. Fontaine, of Purdue. They told about experiments that have been going on for a year and a half, in which livestock has been kept in test areas where control of the dry bulb temperature is maintained by the use of mechanical heating and cooling equipment. Numerous tests have been recorded, and the resulting pattern indicates that hogs, chickens and rabbits will develop flesh more rapidly and in a higher ratio (as related to the weight of the food fed them) when the environmental factors are controlled.

The most effective environmental temperature for swine was found to be 60 F, which is about 20 F lower than that required for human comfort. It was shown by charts that swine would produce 1/3 lb of flesh per lb of feed at this temperature, whereas at temperatures of 40 and 90 F the same animal produced less than 1/10 lb of flesh per lb of feed.

The conclusion drawn from this data was that many barns would be air conditioned before farm homes because year 'round control of temperatures results in greater income at lower feed expenditures. These savings can be applied toward the cost of the temperature control equipment.

Avoiding Oversize Cooling Units

A method of calculating residential cooling loads was described by Professor William T. Miller of Purdue University, who said that because wall areas act both as retardants of heat flow and as storage space for heat units, it is possible to reconsider the selection of cooling equipment needed to maintain a satisfactory comfort level in homes with modern construction. Professor Miller described the experience of an associate who had estimated and installed an air cooling system in his home in Phoenix. The unit was selected on the basis of the commercial method of calculating heat gains and called for a capacity of 70,000 Btu per hr. However, because the next size (7½ tons) was too large, it was decided that a 5 ton unit would be tried. A record was kept of the operating time of this unit and it was found to cycle too frequently. Based upon the operating characteristics, the unit was removed prior to the beginning of the second cooling season and a 2 ton unit installed. This unit has been in operation for two seasons and meets the requirements fully.

Professor Miller listed the advantages of using smaller equipment as lower initial cost, less operating cost, con-

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FIROMATIC
ANGLE VALVE

Firomatic Fusible and Non-Fusible Valves

for oil burning and gas fired installations

MORE THAN 80 DIFFERENT TYPES AVAILABLE in a line that includes Globe, Check, Lever, Anti-hum, Tank and Range Burner Valves. All Firomatic Fusible and Non-Fusible Valves can be operated manually and are provided with self-adjusting stuffing box and back seat feature which prevent leaks at the valve stem. Furnished with or without copper tubing connections.



FIROMATIC TANK
GAUGE Available in
1 1/2" and 2"



FIROMATIC
GLOBE VALVE



FIROMATIC TANK
VALVE Available
in 24 Different
Types



FIROMATIC FUEL
OIL FILTER
Greater Capacity . . .
More Filtering Area.
Adaptable for All Service.

YOU CAN PAY MORE, BUT YOU CAN'T BUY BETTER
Send for Catalog "F"

THE MORSE-SMITH-MORSE CO.

165 Dexter Avenue
Watertown, Mass.

SOLD NATIONALLY
BY JOBBERS ONLY

stant operation, more even dry and wet bulb temperatures, lower operating noise level and lower power supply requirements.

Re-examine Merchandising Plans

Dealers and contractors who want to secure their share of business in the continually expanding year 'round air conditioning market were advised by Clyde M. Barnes, editor of the American Artisan, to re-examine their merchandising plans. He said that contrary to what many people say about the merchandising abilities of the warm air heating, air conditioning and sheet metal dealer and contractor, members of the industry are far better merchandisers than are other trade groups. Mr. Barnes credited the contents of his presentation to the industry itself, from which he had accumulated information on the experiences of people "just like those in the meeting room." He reviewed merchandising practices which had proved effective in application, covering business stationery (its design and how to make it carry a strong message), the use of the show window as a sales tool (several examples of how the window could attract prospective buyers), the use of clean, well-lettered trucks and job site signs.

Mr. Barnes recommended frequent inspection of its advertisements by any company that wants to keep its name effectively before the public. It was his advice that each dealer and contractor study the texts of all advertisements and that each ad carry the most attention-getting punch line possible. A number of effective words and phrases were given, with examples of how they

could be used to advantage. Mr. Barnes said that the best advertisements came from people trained in that work, but that the contractor should know the value of what he was paying for and strive to get the best merchandising program for the amount of money he was investing. It has been found that the amount of money being spent by dealers and contractors in the warm air heating and sheet metal industry for advertising programs is between 1 1/4 and 1 1/2 per cent of the annual sales volume, although as much as 3 per cent is spent by some dealers in the industry, Mr. Barnes stated.

Old-Timers Elect Officers

No convention of the Indiana association would be complete without a get-together by the members of the Quarter Century Club, which is made up of members of the association who have been actually engaged in the warm air heating or sheet metal contracting industry for at least 25 years. Some of the members of this club have been in the business for more than 50 years.

Each year this group elects officers and appoints committee members. The officers for 1954 are Phillip Cordes, president; Lex Balfour, vice president; and Paul R. Jordan, secretary-treasurer. The committee appointed during this session was the aims and objectives committee consisting of Charles Buck, Lex Balfour and Calvin Ulery.

In recognition of the services he has performed for the association throughout the past 35 years, Homer Selch was given an inscribed gold watch.

Paraphrases TV Show to Sell Heating

... This is the City . . . It's Hot and It's Cold
... It has Large Houses . . . and Small . . .
My Heat Covers All!

My Name's Friday
really!
I work out of Comfort Engineering
I'll Give You the Facts About

Perfection
SUPERFEX FURNACES
FOR GAS OR OIL

YOU don't have to wait until Saturday to call Friday!
FOR FREE SURVEY OF YOUR HEATING PROBLEMS.

You Can "Call FRIDAY Anyday"

RICHARD W. FRIDAY
779 Maple St. GEN. 5809-6010

INSTALLERS OF FINE HEATING SYSTEMS SINCE 1928

ONE IMPORTANT way for the heating, air conditioning and sheet metal dealer to get his message across to the

public is by the sign hanging in front of the shop, the signs on his trucks, etc. But just as important as this are his advertising messages in newspapers and magazines, on radio and on television, which tie the dealer's products or services in with the season, or with special local events, special sales events or offers, and new products or models. Such advertising can also take advantage of songs, jokes, personalities or quotations which are currently popular.

An example of the latter technique is the weekly two column ad run in the Rochester, N.Y., Democrat and Chronicle by Richard W. Friday, warm air heating dealer.

Gearing his ad to the large number of people who watch popular television shows, Mr. Friday begins by

paraphrasing "Dragnet," making good use of the fact that his name is the same as that of the show's hero.

He is careful not to underestimate his audience, assuming that puns such as "heat" for "beat" will be understood.

Mr. Friday also makes sure he includes important details about his products in the ad, avoiding the pitfall of overdoing the "stunt" to such an extent that the basic aim of selling is sacrificed.

He also inserts details such as "free survey" and the year of the firm's establishment, which play on the prospect's desire for bargains and emphasize the dependability of the company. Thus, he combines an "old reliable" approach with an appeal to current popular tastes.

JOHN WOOD
GIVES YOU

to help
you make

MORE

PRODUCTS
PRODUCTION
PROMOTION

in '54!

NOW—
a complete
line!

NOW—
both galvanized
and glass-lined!

NOW—
biggest promotion
campaign, ever!

NOW—
models for every
sales situation!

The choice of
Mrs. America



JOHN WOOD COMPANY
Conshohocken, Pa.
Chicago, Ill.

ASK YOUR WHOLESALER ABOUT THE JOHN WOOD "more in '54" PROMOTION PACKAGE!

MERION
DELUXE
•
MERION
MASTER
SERIES



MERION
HEAVI-
DUTY



MERION
DUAL-
ACTION



MERION
TABLE-
TOP



**You can fill
any need**



When you sell
PETRO
OIL & GAS HEATING

and here's why

● **A COMPLETE EQUIPMENT LINE**

There's no "losing" prospective jobs because you don't have the proper unit. The complete line of Petro oil and gas equipment enables you to exactly fulfill the requirements of *any* job.

● **DEPENDABLE AND TROUBLE-FREE**

Once you have installed the proper type and size of Petro heating unit, you're *sure* of its operation. Maintenance costs are low too, for Petro's performance is as simple as it is dependable. And Petro fuel savings keep your customers busy recommending you to their friends.

● **EASY, PROFITABLE INSTALLATION**

Special Petro features—such as "packaged construction" which includes all self-contained wiring and service connections, simple sturdy construction and easy access to burners—reduces installation time, cuts service costs. This makes Petro heating equipment a mighty profitable line to sell.

WRITE for latest illustrated literature and specification sheets. Petro, 3067 West 106th Street, Cleveland 11, Ohio. In Canada: 2231 Bloor Street West, Toronto, Ontario.

SMALL HOMES

MEDIUM HOMES

LARGE HOMES

SMALL BUILDINGS

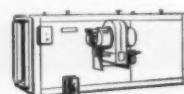


Residential Oil and Gas Furnaces

Complete Petro winter air conditioners are available to fit the heating needs of 4 to 10-room homes. Economical, compact, attractive. Two styles—Highboy model and Lowboy model (Lowboy shown above).

HORIZONTAL OIL FURNACE

Hang it or hide it from basement to attic. Fits anywhere. Five Petro models range from 80,000 to 180,000 Btu capacities.



**RESIDENTIAL AND COMMERCIAL
CONVERSION OIL BURNERS**



Efficient, trouble-free Petro oil burners for residential use (as illustrated). Oil, gas, and combination oil-gas burners for all industrial and commercial heating needs.

**Residential Oil Burners, Oil and Gas Furnaces and
Boilers, Industrial and Commercial Oil, Gas and
Oil-Gas combination Burners**

PETRO
T.M. REG. U.S. PAT. OFF.

**51 YEARS OF LEADERSHIP IN AUTOMATIC
HEATING AND POWER EQUIPMENT**

MUST READING

for
the
residential
air conditioning
trade!



ULTRALITE DUCT INSULATION
(Thermal)
and
ULTRALITE DUCT LINER
(Acoustical)

are insulations of long glass fibers specifically designed for air conditioning application. They are light, flexible, resilient, easy to cut with a knife. "Job size" packages are stocked in 72 cities for prompt delivery. Consult the yellow pages for name of your nearest Ultralite distributor.



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New York • Chicago • Philadelphia • San Francisco • Los Angeles
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DUCT INSULATION
for
RESIDENTIAL AIR CONDITIONING
"How-To-Do-It"—
as well as When, Where and Why

GUSTIN-BACON MFG. CO.



Thermal and acoustical insulation of ducts can "make or break" an air conditioning job. That's why Gustin-Bacon, manufacturers of glass fiber duct insulation for air conditioning, has prepared a new booklet offering suggestions of value to oldtimers, as well as newcomers in the field. Write for your free copy today.

Answers such questions as these . . .

- "Which ducts require thermal insulation?"
- "When should I use a duct insulation with a vapor barrier?"
- "What kind of acoustical treatment do ducts require?"
- "What are the fastest and cheapest methods of applying duct insulation and duct liner?"
- "Do combination units require special duct insulation?"

Mail This Coupon Today!

Please send me your new "How-To-Do-It" folder on duct insulation and duct liner for residential air conditioning.

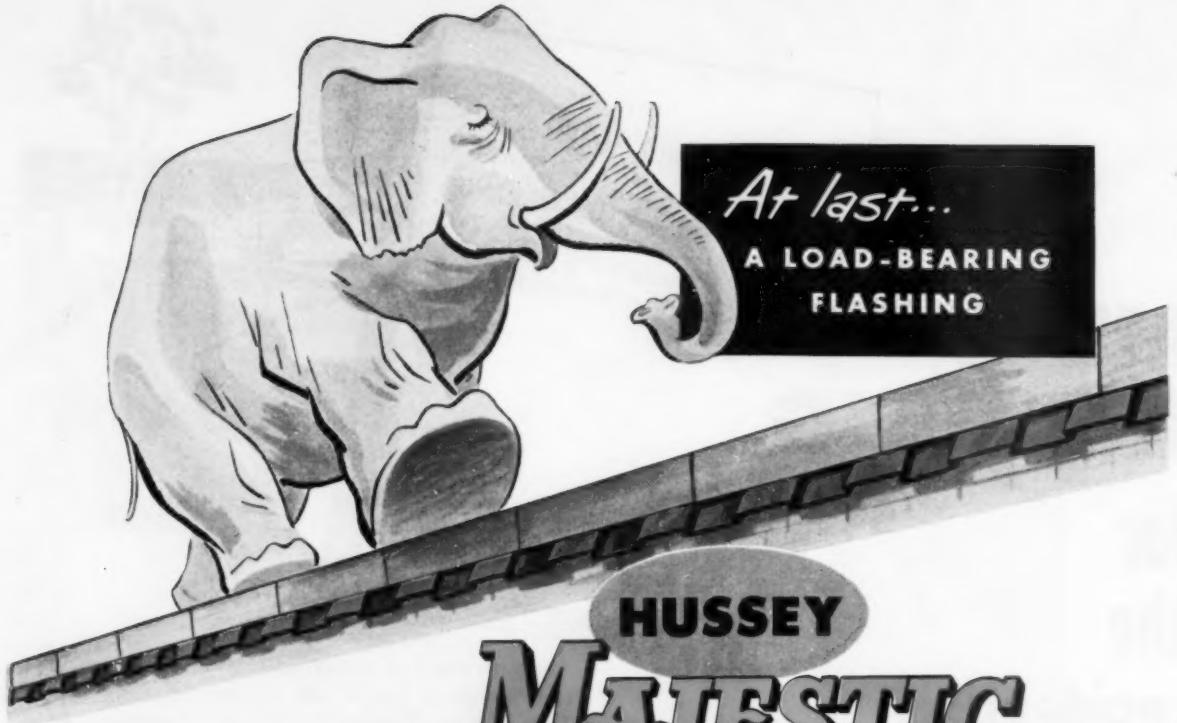
Please send your brochure on Ultralite Duct Insulation and Duct Liner for commercial and industrial air conditioning.

Name _____

Firm _____

Address _____

City _____ State _____



HUSSEY **MAJESTIC** *3-Way Thru Wall* **COPPER FLASHING**

What good is a formed flashing if it crushes under normal compression loads?

Hussey Majestic Flashing is designed to bear the compression loading of heavy coping and caps and will retain its form and key-bonding action that resists shifting movements laterally, horizontally and vertically—*three ways!*

Hussey Majestic 3-Way Thru Wall Copper Flashing gives you mechanical strength, exclusive bonding and drainage characteristics and the lifetime durability of genuine copper at surprisingly low cost. The Hussey Warehouse near you will supply your requirements promptly.

KEY BONDING ACTION

The exclusive undercut crimp design locks mechanically with the mortar like the key in a shaft.

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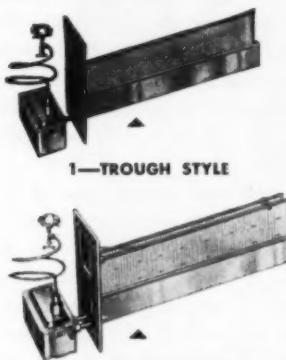
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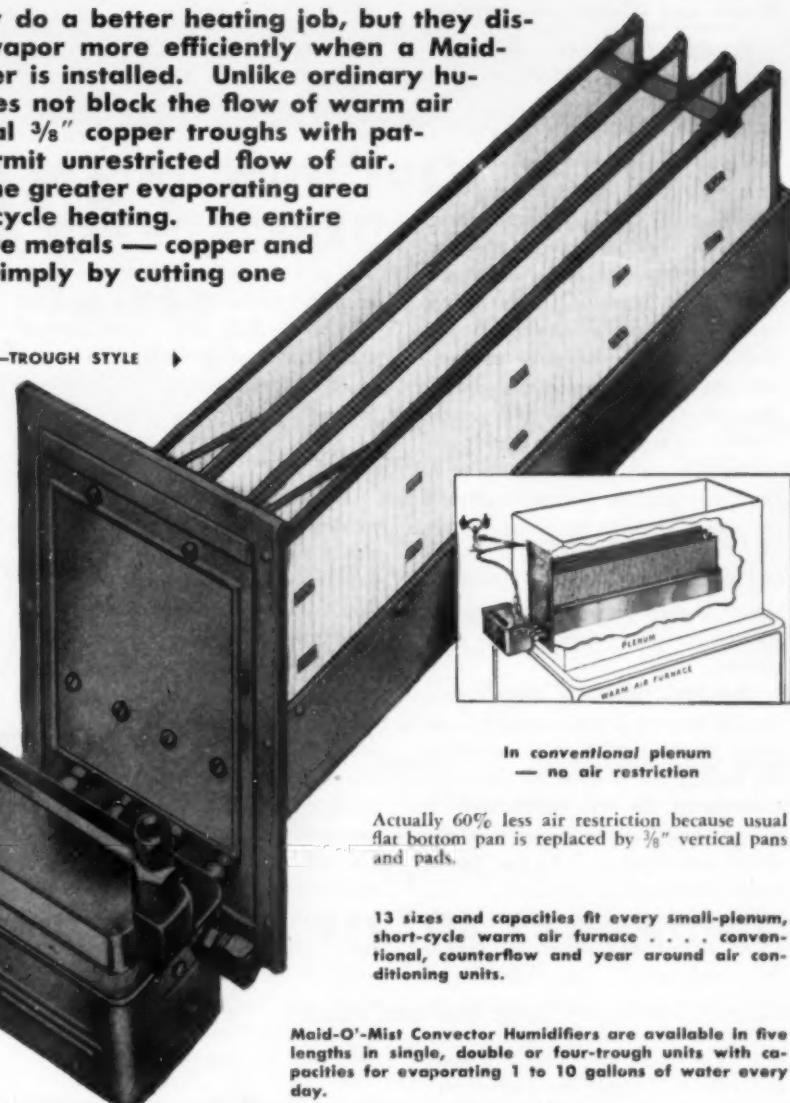


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Furnaces not only do a better heating job, but they distribute necessary water vapor more efficiently when a Maid-O-Mist Convector Humidifier is installed. Unlike ordinary humidifiers, this new type does not block the flow of warm air thru the plenum. Individual $\frac{3}{8}$ " copper troughs with patented evaporator pads permit unrestricted flow of air. Actually, this design gives the greater evaporating area necessary in modern short cycle heating. The entire unit is made of non-corrosive metals — copper and brass — can be installed simply by cutting one opening in the plenum.



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Actually 60% less air restriction because usual flat bottom pan is replaced by $\frac{3}{8}$ " vertical pans and pads.

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MAID-O-MIST, Inc.

3217 NORTH PULASKI ROAD . CHICAGO 41, ILL.

INSULATING HOME —

(Continued from page 69)

maximum rates were 14.4 Btu per hr per sq ft for the uninsulated condition, and 3.4 Btu per hr per sq ft for the fully insulated condition. The comparisons for the other walls were similar, but the values were lower for both the uninsulated and the insulated conditions.

Power and Water Consumption

In order to calculate power and water consumption and the operating costs for the cooling units, it was necessary to calculate the hourly cooling load over a 24 hr period. The hourly cooling loads were plotted and the areas under the curves, which represent the total energy absorbed by the refrigerant, were integrated. The energy removed by the refrigerant enters the residence by conduction through the walls and ceiling, by conduction and radiation through the windows, and in the ventilation air. Energy is also generated by such internal sources as the occupants, the heat equivalent of the power input to the blower motor, etc. The total energy removed by the cooling water includes all of the above factors plus the heat equivalent of the power input to the compressor.

The total operating time during the 24 hr period was assumed to be equal to the total heat removed by the refrigerant divided by the rated capacity of the air conditioner. It was assumed that the compressor motor was sized as 1 hp per ton of rated refrigeration capacity. The water consumption was calculated for a 35°F water temperature rise through the condenser. The power and water costs were computed using the average rates for Champaign-Urbana, Ill. The water rate was 37.1 cents per 100 cu ft, and the power rate was 2.3 cents per kWhr.

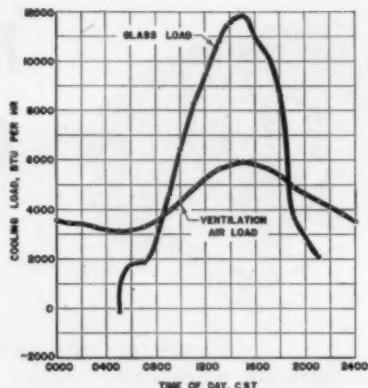
The total energy removed by the refrigerant during a 24 hr period is shown in Table 3 for each of the insulation combinations. It can be seen from this table that the use of 4 in. of insulation in the ceiling would decrease the total heat re-

moved and the operating cost by about 50 per cent. When 3 in. thick insulation was used in the walls and 4 in. in the ceiling, the heat removal and operating cost was about 58 per cent less than that required for the uninsulated residence.

Fig. 6 shows the cooling load imposed by two of the factors which are independent of the insulation in the walls and ceiling of the residence. These factors, which change during the day, are the solar gains through the windows and the load imposed by the ventilation air which was continuously introduced. Other factors, which were constants, were the load imposed by the two adult occupants (800 Btu per hr) and the load imposed by the heat equivalent of the power input to the blower. The power consumption of the blower motor varied depending upon the size of the unit, and it was assumed that a total of 400 cfm of air was circulated through the duct system for each ton of unit capacity.

Cooling Unit Costs

The capacity of the cooling unit needed for the uninsulated residence was 6 tons, and that needed for the fully insulated residence was 2 tons. The costs of the units needed with the three insulation combinations considered, based upon the average prevailing in Champaign-Urbana, Ill., were \$1900 for a 6 ton unit, \$1200 for a 3 ton unit, and \$1060 for a 2 ton unit. The costs are those of the cooling units only, installed in the basement, and they do not include the cost of the furnace or of the duct systems. The cost of the 6 ton unit is estimated from the cost of 5 and 7½ ton commercial units. These would be of the self-contained type often seen in stores, but many of them are made so that they may be connected to duct work.



6 COOLING LOAD factors independent of insulation are heat gains through windows and by ventilation air

Another factor to be considered with larger cooling units is the electrical service which would be necessary for them to be operated satisfactorily. In most residential areas, the electrical service is 120-240 volt, three wire, single phase. With units of 3 ton capacity, it is desirable (but not necessary) to have three phase service at 240 volts. With larger units, this current is a necessity.

It can be seen that the cost of insulating the residence would be considerably smaller than the cost of installing a larger cooling unit. The difference in cost between the 6 ton unit needed for the uninsulated residence and the 2 ton unit needed for the fully insulated residence is approximately \$840. The cost of placing 3 in. of insulation in the walls and 4 in. in the ceiling of the residence is estimated to be less than \$240. It would thus seem that insulation is a good investment from the standpoints of both first cost and the operating cost.

Cost of Insulating

The cost of insulating both the walls and ceiling of the residence,

TABLE 3—POWER AND WATER consumptions and operating costs for a design day

Insulation (in.)	Heat Removed by Unit in 24 hr (Btu)	Compressor Operation, (hr)	Water		Power			
			Consumption (cu ft)	Cost (dollars)	Consumption (Kwhr)	Cost (dollars)	Total Cost, (dollars)	
Ceiling	Walls							
0	0	861,000	12.0	490	1.82	90.2	2.08	3.90
4	0	432,000	12.0	246	0.91	45.2	1.04	1.95
4	3	364,000	15.2	209	0.78	36.1	0.83	1.61

Operating costs are based upon the following rates: Water, 37.1 cents per 100 cu ft; electricity, 2.3 cents per kWhr.

Design Conditions: Outdoor — 95°F DB, 76°F WB; Indoor — 75.0°F DB, 62.5°F WB.

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based upon current local labor and material costs, would be \$236. This was computed using figures of \$0.095 per sq ft of 3 in. thick mineral wool insulation with vapor barrier attached, and with labor costs of \$0.03 per sq ft (assuming that the insulation was installed during the construction of the residence). Although the use of 2 in. of insulation is not considered in this study, it should be noted that it would cost \$0.075 per sq ft and that the labor cost would be the same as for the 3 in. thick insulation.

The cost of insulating the ceiling is greater than the cost of insulating the walls. Four in. of insulation placed in the ceiling (1040 sq ft) would cost \$130. For the walls (848 sq ft) the cost of 3 in. of insulation would be \$106. The cost of providing this insulation in both the walls and ceiling would probably be less than 2 per cent of the total cost of the house. Although no economic analysis has been attempted in this report, it has been pointed out that the insulation costs less than the difference in price between the equipment necessary to cool the fully uninsulated residence and that necessary to cool the fully insulated residence. In addition, the cost of insulating the walls of the residence would be less than the difference in

price between the 3 ton and 2 ton cooling units. It has already been pointed out that the operating costs will be over twice as great for the uninsulated residence as they are for the fully insulated residence.

Heat Loss Also Reduced

Although this study has been primarily concerned with the effect of insulation on the cooling load of a residence, the heat loss of the residence is also greatly affected by the use of adequate insulation in the walls and ceiling. Table 4 shows the heat loss for the same insulation conditions used for the discussion of the cooling load. It also shows the capacity at the outlet of the furnace which would be needed to heat the residence under each of these conditions. This bonnet capacity was calculated assuming a duct transmission efficiency of 85 per cent.

It can be seen from this table that the uninsulated residence would require a furnace having a bonnet capacity of 102,000 Btu per hr. If 4 in. of insulation were placed in the ceiling

TABLE 4—DESIGN HEAT losses and furnace bonnet capacities

Insulation Thickness (in.)		Design Heat Loss (Btu/hr)	Furnace Bonnet Capacity (Btu/hr)
Ceiling	Walls		
0	0	86,800	102,000
4	0	42,500	50,000
4	3	32,000	37,700

ing, the bonnet capacity of the furnace should be 50,000 Btu per hr, and if the residence were fully insulated, the bonnet capacity of the furnace should be 37,700 Btu per hr. It should be emphasized that these are bonnet capacities, and that the fuel input rate would be higher than these values. Even though an oversized heating unit may be used, a correctly sized heating unit will usually be less expensive and will produce more satisfactory room-air temperature conditions.

Although the difference in price between furnaces of the capacities needed to heat the insulated and the uninsulated residence is not as great as the differences among the various sizes of cooling units, the money thus saved can be considered to apply to the cost of the insulation. In addition, the use of insulation will effect reduced fuel consumption and operating cost.

In summary, placing 4 in. insulation in the ceiling and 3 in. insulation in the walls of the residence would cost less than \$240. More than this amount can be saved, however, in reduced first cost of cooling and heating equipment. In addition, the operating costs for both heating and cooling would be much less for the insulated residence than for the uninsulated residence.

COOLING TROUBLE —

(Continued from page 57)

combustion gases rise up the chimney, a slight pressure differential is created. This in turn causes outside air to move into the equipment room.

Prevent Negative Draft

Air conditioners have sometimes been installed and operated in such a way as to upset the delicate draft needed for supplying combustion air. The use of an equipment room as a return air plenum, for instance, might make it possible for the air conditioner to create a negative draft and actually pull air down a chim-

ney. This not only prevents proper combustion, but it is extremely dangerous, since it is possible for combustion products to be pumped through the occupied quarters of the building.

Cooling towers and evaporative or air cooled condensers located in the same room with combustion equipment can also cause trouble of the type described above if they are set up to draw air from the room rather than directly from the outside. A dependable means for assuring an adequate supply of combustion air must always be provided. Vent openings (such as windows) that can be closed and forgotten are not con-

sidered adequate for this purpose.

Avoid Water Overflow

Certain installations have caused trouble due to overflowing water. This may be condensate from the cooling coil, leakage from condenser water fittings, drippage from a sweating casing, or condensation from cold water lines. These conditions can all be readily corrected. Condensate from the coil will not overflow if the drain is large enough and kept unclogged. Leakage can be stopped by tightening fittings. Sweating can be stopped by the use of insulation. If the unit location is such that serious damage may result

National Trade Promotion Program Gets Under Way

People in the plumbing and heating industry can expect to see some concrete results very soon of the work of the National Trade Promotion Committee which has been attempting to give shape and direction to the long talked about National Trade Promotion Program. After numerous informal conferences between various industry groups, the Committee has finally assembled an organization which is national in character and which is in a position to carry on trade promotion work which will be felt in almost every region of the United States.

Participating organizations are:

The National Association of Plumbing Contractors
The Central Supply Association, and
The American Institute of Wholesale Plumbing and Heating Supply Associations, Inc.

The purpose of the Committee is to improve relations between the Industry and general public by promoting an Industry Education Program aimed at:

1. Increasing the opportunities for additional and/or new business by a uniform scientifically designed sales training program.
2. Providing members of the Industry with courses in business management, public and employee relations.
3. To encourage increased joint sales effort by all members of the Industry.
4. To study advantages of product display, products standardization, standardized packaging, and national and local advertising.

The program, which has been discussed in industry circles for several years, now appears ready to go forward as a result of a meeting in Washington, D. C., on January 13th by representatives of the NAPC, the CSA and the American Institute.

The entire day was spent in a thorough discussion of Industry problems at the wholesaler and contractor levels and numerous ideas were exchanged as possibilities for improving public relations and developing better business management methods. It was generally felt that because the NAPC "Business Management Reference Manual", now being produced and distributed to all NAPC members, represents study material which is rapidly becoming available, this would be used as the basis for the first meetings of local trade promotion committees to be formed in as many locations throughout the country as possible.

The first Trade Promotion Meeting is scheduled for March 8th in Dayton, Ohio and the second on March 15 in Washington, D. C. Immediately after the second meeting, the National Trade Promotion Committee will meet again, check the results of the two pilot meetings and on the basis of findings proceed to complete plans for aiding in the establishment of many similar local trade promotion committees.



You, as a retailer, (or dealer, or contractor), are in business for one reason . . . to make money. But you won't make money if your services aren't worthwhile to the people who buy from you. In other words, you only profit when you are providing something that is needed to people who want it.

Wholesalers are in business to make money, too . . . a pretty obvious fact. But they couldn't exist unless they were performing needed services, and performing them both well and economically. The wholesaler's success depends on his ability to give you what you want—when you want it.

Your Wholesaler Can Help You

Your wholesaler wants you to make money—the more the better, because he makes money only when you do. He's ready, and thoroughly prepared to assist you in any phase of your business. Chances are, he can show you how to make more money if you'll give him the chance. He's also ready to show you—to prove to you—why your chances for making money are better if you buy from your wholesaler.

If you and your heating wholesaler aren't now on a close enough basis to know each other well and understand each other's problems, why not try it now. Remember, your wholesaler is your partner. If he weren't a helpful and important link in the selling chain, he wouldn't be in business at all.

One of a series of advertisements presented in the interests of better distribution of heating equipment all over America by THE HEIL CO., makers of HEIL Automatic Heat. This series is prepared in co-operation with the National Heating Wholesalers Association and the Central Supply Association.

from water leakage or overflow, the best safeguard is to set the entire unit in a properly drained, rust-resistant, watertight pan. It should be large enough to catch any possible leakage from the connections at the unit.

So far, we have confined our discussion to the equipment itself. Whether the examples of poor practice are exclusively the responsibility of the designer or the installation man or both depends upon the dealer's organization. It certainly does no harm to have both groups familiar with the problems that may arise.

Duct System Check List

Turning now from the equipment, let us imagine that we are called upon to inspect a duct system such as the one illustrated. Each element will be considered to see whether or not it could be improved.

First of all, how is the equipment mounted? Is it plumb, or was it set directly on a pitched floor? Units should be placed on a 2 in. thick concrete pad, if possible. If headroom does not permit, they should at least be mounted on an area leveled by grouting.

Is the bonnet or plenum chamber large enough? Do the connections to it permit smooth passage of air? If the plenum is also used for warm air, is the proper space left between the plenum and the floor joists? Good practice follows recommended safety codes and provides transition collars between the plenum chamber and the trunk ducts. Small plenums and abrupt take-offs may cause poor distribution and high duct losses.

What type of take-offs are used from the trunk to the branches? Are these streamlined by the use of elbows, or does the branch enter the trunk at an abrupt 90 deg angle? Air should always leave the trunk through a transition which permits a gradual change in the direction of flow. Turns of 90 deg without transition elbows are not considered good design.

Is Pressure Loss Minimized?

Are elbows constructed to provide minimum pressure loss? Elbows

with an inside radius equal to the duct width are considered good design. Where smaller inside radii or square elbows are necessary, vanes should be installed to keep resistance to a minimum.

Where enlargement sections are used, is the slope kept to about 1 in 7? Abrupt enlargements of a duct can cause a very high resistance pressure. These sections may be needed in the return system in order to expand the duct size to meet a coil or return opening in a unit.

If a branch take-off immediately follows an elbow, is it located following the outside edge of the elbow? Air flowing around an elbow tends to pile up toward the outside curve. Hence, a take-off following the inside curve may not receive the amount of air expected.

Is each branch fitted with a locking-type damper with a position indicator? Dampers are needed to balance the system properly. This is especially true in a residential system where standard rather than exact size ducts are usually used.

Is the duct system tight? Are recommended seams used? Are all unavoidable holes and cracks sealed with the proper kind of tape that is not affected by heat or moisture? If joist or stud spaces are used for return air, is the passage properly sealed? Air leakage into a system at the wrong spot can cause considerable capacity loss in air conditioning.

Will System Stand Moisture?

Will the materials used stand up under moisture associated with conditioning? Air conditioning ducts may sweat under certain conditions. Materials acceptable for heating duty only may not be good enough for air conditioning. Materials should be heavy enough to prevent breathing and rattling.

Is the duct properly supported? Ducts should be hung or supported from joists or strapped to studs. They should never be nailed or screwed directly to parts of the building.

Is the duct properly insulated where excessive heat loss or gain is

expected? Ducts passing through unconditioned spaces, such as attics and garages, should be covered with a vaporproof insulation.

Is the duct system isolated from the equipment by the use of flexible connections? Well designed collars should be as airtight as possible. Their purpose is to prevent vibrations and noises in the equipment from being transmitted to the duct system.

There are many other details of a duct system that may come under the heading of poor installation. The manner in which a duct passes through a masonry wall, for instance, can be classified as good if 1 in. of insulation or a 1 in. air space separates the duct from the wall. If an uninsulated duct is pointed to the wall with mortar, there could be a considerable transfer of heat between the duct and the wall, and the detail would have a "poor" label.

Another detail is the stackhead. This should be carefully installed so that there is no air leakage into the wall. The register which covers the opening in the stackhead should be installed so that air cannot leak past its edges and cause dirt streaks on the wall.

Design — the Basic Choices

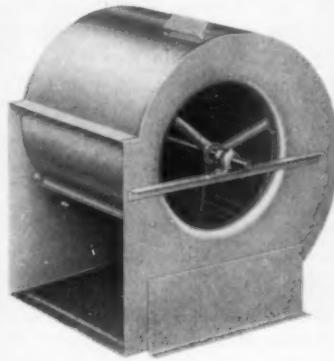
The discussion to this point has covered certain installation practices which can either be a direct cause for complaint or can lead to complaints by adversely affecting the overall performance of the air conditioning system. A noise or vibration, for instance, will bring an immediate response from the owner. A poorly constructed duct system, however, may not be apparent to the owner until he has lived with it for some time and made efforts in other directions to clear up difficulties for which the system is to blame.

Our story is not complete unless we look at some of the consequences of poor design. We said earlier that we had made our designer directly responsible for 1) sizing the cooling unit, 2) sizing the ductwork, 3) selecting and locating supply registers and return grilles, and 4) designing the control system. These are

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basic decisions. If an air conditioning system cannot be made to function properly by having the service man check for defective parts and maladjustments or having the installation man correct any work for which he is responsible, the search for an answer must eventually lead to the designer.

Selecting Proper Unit

One of the most serious design faults is the selection of a cooling unit that does not have adequate capacity. It is not difficult to appreciate the importance of this when it is realized that all of the ductwork, blowers, registers, grilles and auxiliary equipment such as the cooling tower are sized to match the cooling unit capacity. On many jobs the cost of the air handling system at least matches the cost of the unit itself.

The same concept of "adequate unit capacity" is not always shared by the dealer and the owner. To protect himself, the dealer should always make sure that the owner knows exactly what to expect of his cooling system. A "budget" system will not be tagged as inadequate if the owner is honestly advised as to what he is buying. A "deluxe" system, on the other hand, must perform in accordance with the owner's requirements or the dealer's design department will have to answer for it and make good.

In selecting a unit, the designer matches unit capacity against cooling load. Unit capacities can be determined fairly accurately by test, but cooling loads must be estimated by assuming many factors which are subject to considerable interpretation and variation. The accuracy of the cooling load estimate cannot be determined until after a system has been run under peak loads. It may then be shown that the unit selected is 1) acceptable, 2) too small, or 3) too large.

An acceptable unit for residential application closely balances the cooling load. If its capacity is a little low, it will not be able to keep the dry bulb temperature from climbing slightly during the load peak. This

condition is tolerable, however, as the constant unit operation will keep the humidity depressed. If its capacity is a little high, it will maintain desired inside conditions as long as the load is within the design limitations. The latter unit will run almost constantly at peak loads, having long on and short off cycles. The long running time will permit good humidity control.

If a unit is found to be too small, remedial measures which will reduce the cooling load should always be carefully weighed against the cost of replacing the small unit with a larger one. Sometimes awnings, attic insulation, or even a reduction in the amount of outside air brought in can make the difference. Selective cooling — where certain areas of the house are cooled at certain times as they are occupied — is another solution that might be considered.

A unit which is too large may be even more undesirable than one which is too small. As indicated above, certain steps may be taken to reduce the cooling load of an undersized unit. This not only leads to operating economy, but it retains the feature of constant operation with its resulting good humidity control. An oversized unit will have short running periods, since it will be able to reduce inside temperatures rapidly. During the off part of the cycle there will be no control of and, therefore, a rise in humidity.

Although the advice is to try to reduce load when a unit is found to be undersized, we obviously cannot reverse this advice and recommend that the load be increased when the unit is found to be too large. Such a procedure would be exceedingly uneconomical. The objective in unit operation is long running time to keep humidity under control. For the oversized unit, a step toward this objective is to reduce air quantity.

Designing Duct System

The designer considers two things when he sizes ducts. These are velocity and resistance pressure. Velocity is important since it is an index of noise. Resistance pressure is important as it limits the amount of air

that may be handled by a given blower at a certain horsepower. Air noise problems may sometimes be solved by acoustical treatment. The best practice, however, is to avoid trouble by following the recommendations given in the ASHVE Guide. Resistance pressures higher than those anticipated can be overcome by upping the blower speeds and motor sizes involved.

The designer selects and locates registers and grilles. If these do not operate to the owner's satisfaction, the label of poor design will be applied. Complaints may involve such things as drafts, "dead spots", uneven temperatures in the same room, stratification, ceiling or wall dirt streaks, and noise due to high velocities. In locating registers and grilles, the designer must consider that they will be used for both heating and cooling. Almost any location for the supply air may be chosen provided the proper register is used. Problems that arise after a job is tested can often be solved by a simple change to a more suitable register. A basic rule of distribution in air conditioning is to place the air where it should be by means of the supply registers alone. Return grilles should never be depended upon to aid in distribution.

Although the control system for a residential cooling plant may be very simple, complaints may develop for one or more of the following reasons: 1) the instruments are not located properly to sense true inside conditions; 2) the functions and operation of the control system are not fully understood by the owner; 3) the controls are such that they require frequent adjustment to work properly; or 4) the operation of the controls — especially to change from heating to cooling and vice versa — is not convenient. In laying out the control system, the designer should tie in all auxiliary equipment so that it will start automatically as required. The owner should not be required to remember to throw switches in sequence. Control problems can usually be avoided by common sense design which makes use of reputable control devices.

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Approximately 7 inches additional free area to each model. Totals 33 inches for Model #100 ... 19 inches for Model #50.

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All models lower and narrower. Blend perfectly with contours of room and baseboard. Recess in

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12" x 2 1/4". Fits both Model #50 and #100.

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Eliminates turbulence. Directs air where it is most needed with a decreased pressure loss.

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WHAT DO YOU SAY? —

(Continued from page 72)

be used by any engineer to evaluate air filters at the actual point of installation. It samples the actual atmospheric contaminants and does not require the use of artificially compounded test dusts. — **GEORGE F. LANDGRAF**, Vice President in Charge of Engineering, Trion, Inc.

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"I Have Basic Objections to Code"

WHILE WE ARE a member of the Air Filter Institute, we definitely do not concur with the new AFI test method for air filters. Our basic objection to this as a test code for the air filter industry is that it does not quantitatively present filter performance results on known particle sizes of dirt.

We feel that the proper test code should allow filters to be evaluated on the basis of efficiency versus particle size with different densities. Such information would lead to a family of curves which would allow the engineer or prospective user who knew his dust problems to properly select adequate air cleaning equipment. It would also provide the information to allow the proper economic application of the different classes of cleaning devices — electrostatic, strainer, impingement and cyclonic type filters. Such a test code would not only give engineers and users a better chance of evaluating present cleaning devices, but would be a strong spur toward research and development for the improvement and application of all air cleaning devices.

We have for many years been testing filters and publishing results with efficiency plotted against particle size as well as against dust holding capacity — so we know a quantitative evaluation is possible. The old ASHVE code and the new proposed one still leave the industry without a standard unit of evaluation. Certainly, if an industry is to grow, it requires some standard quantitative method of evaluation.

Adopting the AFI code would delay getting the air filter industry on a sound basis for making evaluations. — **R. S. FARR**, Farr Co.

THE AUTHORS REPLY

A. NUTTING, R. F. LOGSDON —

"We Urge All to Adopt this Code"

OBJECTORS to the AFI code appear to have three things in common:

- They each manufacture only one type of air cleaner.
- They each advocate one method for testing all types of air cleaners, though each advocates a different method.
- They each totally ignore the question of filter life or dust holding capacity in their proposals.

All those manufacturers whose lines cover both viscous impingement and electrostatic filters are in unanimous agreement with the AFI code, we believe. Obviously they have had the most experience with both types of filters. All who manufacture both types are in agreement that viscous impingement units cannot be fairly tested by the discoloration method with atmos-

spheric dust, and that electrostatic filters cannot be fairly tested by the weight method with synthetic dust. The reasons for this are obvious and have been stated repeatedly:

a) Atmospheric dust is so variable and discoloration efficiency so low that it is impossible to separate a good viscous impingement unit from an inferior one.

b) Efficiencies of electrostatic filters by weight method on synthetic dust are so uniformly high that it is impossible to separate a good electrostatic filter from an inferior one.

These facts are recognized by everyone who has conducted both types of tests on both types of filters. We repeat that mechanical type filters are intended to remove dust and lint — the type of particulate that lodges on heat exchange surfaces, settles out on furnishings — but are not intended to remove smoke or fumes. The latter type of particulate does not settle by gravity but is deposited by various means on walls and furnishings to cause discoloration. Electrostatic precipitation or its equivalent is required to remove discoloring particulate effectively. Such cleaners should be tested by discoloration means.

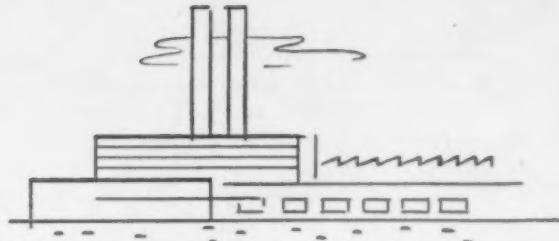
There is no standard for atmospheric dust. We all know that dust varies widely as to chemical makeup, concentration, particle size, etc., with both time and location. It certainly is not practical to determine efficiency and dust holding capacity for every location under every dust condition. The AFI method is certainly not intended for field use nor is any method reliable for field use in evaluating comparative performance of air filters of the type covered by Section I of the code. The dust conditions vary too widely to set any standards.

Discoloration tests are generally applicable for field evaluation of those filters effective in removing discoloring types of particles, as such discoloring particles are virtually all under 1 micron and therefore present a degree of uniformity. Use of such a method on the ordinary mechanical type filter, however, is ridiculous. In R. S. Dill's early work (A Test Method for Air Filters, ASHVE Transactions, Vol. 44, 1938, page 379) he recognizes and states that efficiencies were uniformly low and difficult to evaluate. There is no question about this. A good dry type filter may show up clearly better than a run-of-the-mill viscous impingement unit but it is impossible to separate the latter from superior and inferior types by discoloration tests on the atmosphere.

The filters covered by Section I of the AFI code are not intended to be effective in removing discoloring particulate — indeed, most filters are not purchased for this purpose. Their chief application is the protection of equipment and removal of the type of dust that settles on furnishings and equipment. There is no logic whatever in testing such units by discoloration means. Furthermore, no means are suggested for life or dust holding capacity tests when offering the discoloration procedure with atmospheric dust.

We say the industry should test mechanical filters by a common method. Section I of the AFI code gives the user a chance to compare performance and let any product stand or fall on its own merits. The public and industry will both benefit in the long run. Similar-

*leading manufacturers
of heating equipment*



In addition to this famous Field "M" Control see the new models of Field Controls at the O.H.I. Show, Philadelphia, May 16-20, Booth No. 9.

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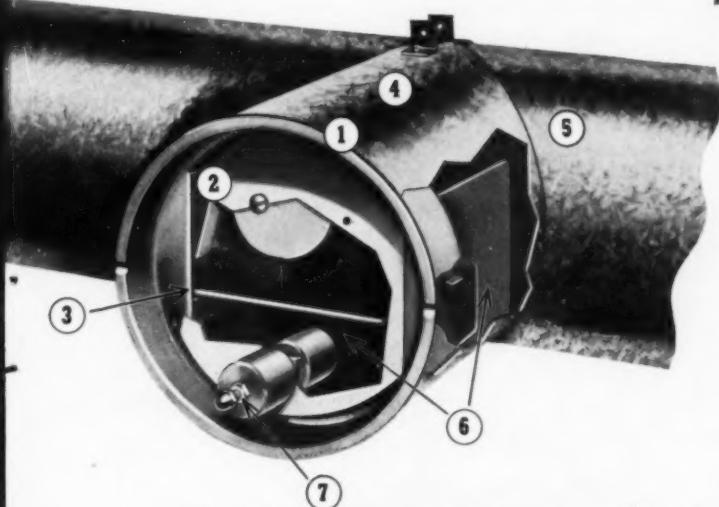
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ly, with electrostatic filters or other types for which discoloration particulate removal is claimed, let them be tested by a common means — discoloration with atmospheric dust — and give the user the information he needs to compare performance.

We urge that all manufacturers of viscous impingement and dry type filters adopt Section I of the AFI code. We further urge that both the ASHVE and the AFI, as well as industry members individually, continue work on particle size analysis, uniform particle generation and particle size efficiency procedures. Certainly no one is satisfied with any currently proposed particle size efficiency method. Aside from the problem of ob-

taining clean fractions, the problem of dispersion of submicronic fractions remains. The industry is also in need of a reliable, practical particle determination method that can be used as a standard. Unless and until these problems are solved, the industry cannot intelligently adopt a routine test procedure based on particle size.

We appreciate the opportunity to express our views on the AFI code and to answer the various criticisms. We hope and trust that the exchange of opinions has served to clear the air and that the AFI will now proceed with the additional sections of the code.—A. NUTTING, Vice President and Chief Engineer, and R. F. LOGSDON, Asst. Director of Research, American Air Filter Co., Inc.

COOLING UNIT NO NUISANCE —

(Continued from page 82)

"The use made of property may be unpleasant, unsightly or to some extent annoying and disagreeable to the occupants of neighboring property without creating a nuisance. When, however, it not only interferes materially with the physical comfort of the persons in their own homes but also causes financial injury to the owners, it constitutes a nuisance."

Some Inconveniences Necessary

One of the judges of this court, however, dissented to this decision awarding an injunction against the use of this type of fuel and in his opinion asserted a principle of law that was a feature in the determination of the charge made recently against the owner of the air conditioning equipment.

"The exactions of the necessities of the social state and the fact that some inconvenience must of necessity often attend the ordinary use of property, without permitting which there could in many cases be no valuable use at all, have compelled the recognition in all systems of jurisprudence of the principle that each member of society must submit to inconveniences consequent upon the ordinary and common use of property, provided such use is reasonable both as respects the owner of the property and those immediately affected by the use in view of time, place and other circumstances.

"It is a general rule," continued this dissenting judge, "that every person may exercise exclusive dominion over his own property and subject it to such uses as will best subserve his private interests, but this general right of property has its exceptions and qualifications.

"So use your own property that you do no injury to the property of others" is an old maxim which has broad application. It does not mean that one must never use his own so as to do no injury to his neighbor or his property. Such a rule could not be enforced in civilized society. Persons living in organized communities must suffer some damage, annoyance and inconvenience from each other. For this they are compensated by all the advantages of civilized society. If one lives in the city he

must accept it, suffer the dirt, noisome odors, noise and confusion incident to its life."

Standard of Comfort Local

The court, basing its decision of the charges made against the user of the air conditioning equipment on the law that has been set out in these authorities, said in conclusion,

"When the air conditioning unit is in operation it makes a continuous, droning sound comparable to the distant roll of the ocean. It is the type of sound to which one may become so accustomed in the course of time as to be completely oblivious of its existence. Its continuous character makes it less annoying than other noises which have become part of the fiber of our urban lives, such as the sound of traffic with the racing of engines and sounding of horns, the conversations of passersby in the streets, the crying and playing of children in the neighboring apartments and similar noises forming a part of the routine of our daily lives.

"The person who resides in the center of a large city must not expect to be surrounded with the stillness that prevails in rural districts. No one is entitled to be absolutely quiet in the enjoyment of his property. He may only insist upon a degree of quietness consistent with the standard of comfort prevailing in the locality in which he dwells.

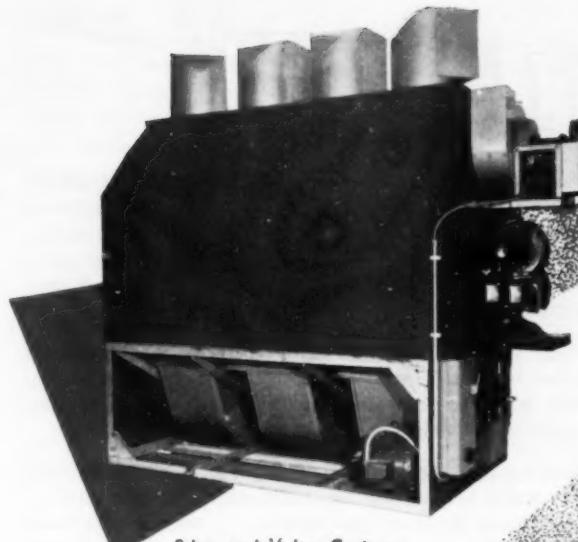
"The air conditioning machine is a product of man's constant search for the improvement of his own comfort and enjoyment of life. That its use may cause some annoyance to others does not justify denouncing its use.

"No doubt the manufacturers of our air conditioning units are aware of the desirability and necessity of producing their machines in such a manner as to render them as noiseless as is consistently possible with their efficient operation.

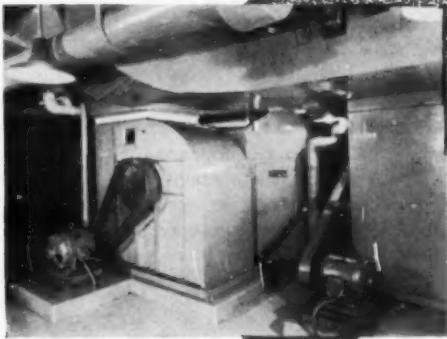
"The present case involves the operation of a properly functioning air conditioning unit, and does not constitute a public nuisance. Another question would be presented if, due to defective construction or disrepair, the unit were to be excessively noisy."

[Note: While this discussion applies to actual cases, it should be remembered that legal rules vary in different states.]

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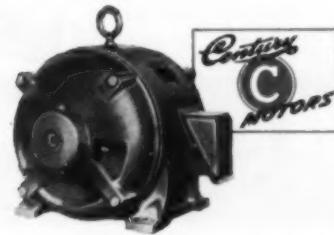
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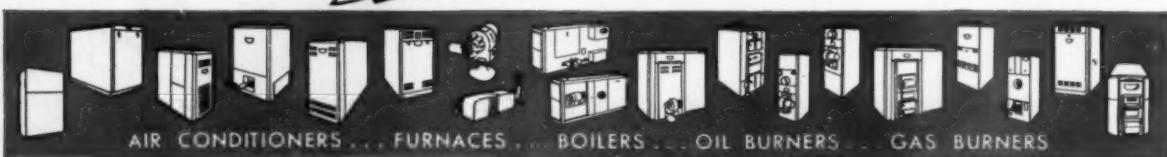
Thatcher units are available for both the new construction and replacement markets. The "V" Series, illustrated below, is one of over 20 models in more than 75 different sizes.



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MINNESOTA CONVENTION —

(Continued from page 65)

Any expense incurred by reason of the fact that the dealer is performing a job, or performing under a contract to do certain work, and which would not otherwise be incurred, is definitely a direct job cost, he said. On the other hand any expense which is incurred by reason of the fact that the dealer is in business offering merchandise or services to the public, whether or not he is performing on any certain contract, is an overhead expense item.

Percentages of overhead and percentages of costs are directly reflected by each business operation, and without knowing figures and other confidential information known only to the individual contractor, it is impossible to recommend any percentages to be used, he stressed.

"However," he said, "we can give the proper formula for figuring overhead percentages," and proceeded to describe two methods which may be used.

One method is to take the total amount of overhead expense and divide it by the total sales figure, after adding two decimal points (multiplying by 100) to the overhead expense items total. The result is the percentage of overhead figured on total sales volume.

"This is not always considered the proper method," he said, "because most firms figure their overhead against their job costs — which gives them the cost of doing business where a specific amount of work is done, regardless of the margin of profit in any one job." This provides a more constant figure, he said.

For this method, the total job costs of jobs completed, closed and billed is divided into the total overhead expense for the period. The resulting figure is the percentage of overhead expense incurred to do this volume of business, regardless of the amount of sales. This eliminates the profit question, which also varies a great deal in different contracts.

Overhead Percentage Figures Can Mislead

In discussing percentage of overhead and comparisons with other businesses, it is important to know if the overhead is figured on total sales volume or on total job costs volume, he pointed out.

"Overhead cost percentage figures can be very misleading," he continued. "For instance, figures furnished for this example only could show a percentage of overhead in one case at 10.32 per cent of sales volume; however, if a firm were to take a cost-plus contract with this percentage of overhead, it would lose money because its cost of overhead over job costs figures 13.82 per cent, or a difference of 3.5 per cent. On a volume of \$50,000, this would mean a difference in profit of \$1750.

"In another instance, the percentage of overhead figured on sales volume shows 18.86 per cent, while if it is figured on total job costs, it runs 25.77 per cent. On any volume of work taken on a cost-plus basis this would show a large loss or great reduction in profit to the operator."



DISCUSSING THE EVENTS of the day are (l. to r.) Harry Quade, Jr., R. J. Grant and Grant Gillespie

Mr. DeLaughter gave as another reason why overhead should be figured on job costs the fact that only in this way can one determine the proper percentage to add to the estimated costs of doing a job — an amount which must be added to the amount of profit anticipated before the contractor can arrive at a proper selling, or bidding, price.

Should Have Basic Accounting Knowledge

"It may be the opinion of some contractors that I have gone too far to the accounting side in these discussions," he said, "but I am firmly convinced that any man operating a business today needs at least a basic knowledge of accounting and bookkeeping.

"Sales are important. The production and installation of your work are important. Collections are always important. But all of the various operations which go to make up your business must clear through your accounting system, which is the hub of your entire business operation. If your accounting system is not properly set up, and more important than that, if you are not familiar with how it should operate, it can bring you into deep trouble quickly."

One of the best safeguards, he pointed out, is to engage the services of a good auditor to check procedures, to go over records thoroughly with the company bookkeeper or auditor, and to make sure that the system in use is adequate for providing the right information. He said the problem should be approached more from the "system" rather than the "correctness of figures" point of view.

Providing for Addition of Cooling

The features of current summer cooling packages and their application to specific situations were described by Otto J. Ress, chief engineer, L. J. Mueller Furnace Co., who recommended that in designing warm air heating systems where summer cooling equipment is not now being installed, provision be made for future installation of a cooling package with a minimum of alterations. He said that this requires sizing the ductwork, registers and other air distributing equipment to handle the higher vol-

umes normally used for cooling applications. In addition, the furnace should be located so that there is sufficient room to place the cooling package. Providing electrical wiring systems to handle the current required to operate the cooling package when it is installed will also save the customer time and money. Equipment is now available in a wide range of capacities to handle almost any residential cooling loads, Mr. Ress said, pointing out that many of the packages include their own blower which has been fitted with a motor of sufficient power to deliver the higher air volumes required for some air distribution systems during the cooling season.

Facts About Condensers

In discussing the condensing medium for cooling the refrigerant vapor, Mr. Ress pointed out that air cooled condensers can be either outdoors, adjacent to walls or near the cooling compartment. He said that if the air cooled condenser is outside the building, means to provide adequate protection from weather are essential. This type of installation also has worked best when shade was provided. In wall locations, the shaded walls were preferred and condenser assemblies should be located under or over rooms that normally are not affected by machinery noises (such as breezeways, dining spaces and kitchens). Where the air cooled condenser is installed near the cooling coil, it is essential that ductwork conduct outside air to the condenser and the heated air from the condenser to another outside opening.

The volume of air normally handled by fans for air cooled condensers is between 550 and 600 cfm per ton. Mr. Ress said that for each 10 F rise in outside dry bulb temperature the capacity of the cooling equipment would drop approximately 5 per cent and that about a 4 per cent increase in power consumption could be expected for the same 10 F increase in outside air temperature.

When discussing the use of water cooled condensers, Mr. Ress suggested that a pre-installation investigation be made to determine the availability of an adequate water supply and disposal system.

Stress Apprentice Training

The importance of bona fide indentured apprenticeship in the sheet metal industry was the basis for a forum discussion, the panel consisting of Arlowe W. Esau, sheet metal contractor, moderator; Frank Musala, Minnesota director of apprenticeship training; George Champaign, director, Vocational Education, Duluth; Edward P. Hudoba, business representative, Local No. 34; Walter A. Swenberg, sheet metal contractor; and W. F. Sahlin, Dunwoody Industrial Institute.

This panel made recommendations designed to aid in the achievement of a number of goals: 1) Providing a sufficient number of apprentices to meet the needs of the sheet metal industry, 2) developing well trained and adequately skilled journeymen sheet metal workers, 3) extension of training through correspondence and personally supervised classes in outlying areas, 4) securing

instructors with skill in both craftsmanship and ability to teach, and 5) motivation of graduate apprentices to take pride in their trade.

The panel congratulated the Minnesota Joint Apprenticeship Committee on the apprenticeship training program which requires an apprentice to have the following experience before he may become a journeyman:

General sheet metal work	1000 hr
Operation of hand and machine tools	1000 hr
Roofing and spouting	660 hr
Cornice and skylight	330 hr
Heating and ventilating	1000 hr
Furnace	500 hr
Exhaust and blowpipe	1000 hr
Air conditioning	500 hr
Specialty work	500 hr
Erection in sheet metal construction	660 hr
Welding	850 hr
 Total	8000 hr

Architects to Work with Trade Groups

A panel discussion in which three members of the Minnesota Society of Architects exchanged ideas and opinions with the contractors resulted in a better understanding of industry problems as encountered by both groups.

Walker Jamar, sheet metal contractor, moderated the forum consisting of Paul Liebelt, S. L. Stolte, and P. M. Campbell, architects. The discussion brought out the fact that architects find themselves becoming more involved in the completion of a building than they wish. They prefer the general contractor to handle the entire construction, but due to the handling of some subcontractors by general contractors it has become necessary for the architect to accept prime bids from many contractors representing one trade, it was pointed out. It appears that both the sheet metal contractor group and the architects want to find some way to prevent general contractors from attempting to follow bid shopping practices. As Mr. Campbell said, "We want to do what is best for the customer and if it is necessary for the architect to accept prime bids from trade groups to stop bid shopping, then we will open the entire contract to the trades."

Two other problems that received considerable attention were the long waiting period for partial payment on work completed (where the entire contract is held up due to contributing factors outside of the control of the sheet metal contractor) and the incorrect categorization in job specifications of work assigned by jurisdictional award to the field of sheet metal contracting and erection. The solution to these problems seems likely, as it was agreed that a committee representing the architects' association would meet with a similar committee appointed from the sheet metal contractors' association to compile a fact sheet for distribution to all architects that would place the equipment required for a specific building in the correct category.



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Roger Booth, left, owner of Heating, Inc., Colorado Springs, talking to Honeywell sales engineer Bob Forster

"The key to selling Electronic Moduflow is this little outside-the-house thermostat"

— says Roger Booth of Colorado, who does a half-million a year in home heating alone

"I always take a Honeywell Electronic Weathercaster along with me on sales calls ... and remove the cover while I'm talking.

"I've found customers never fail to ask how it works and where you put it, which are the questions I wait for.

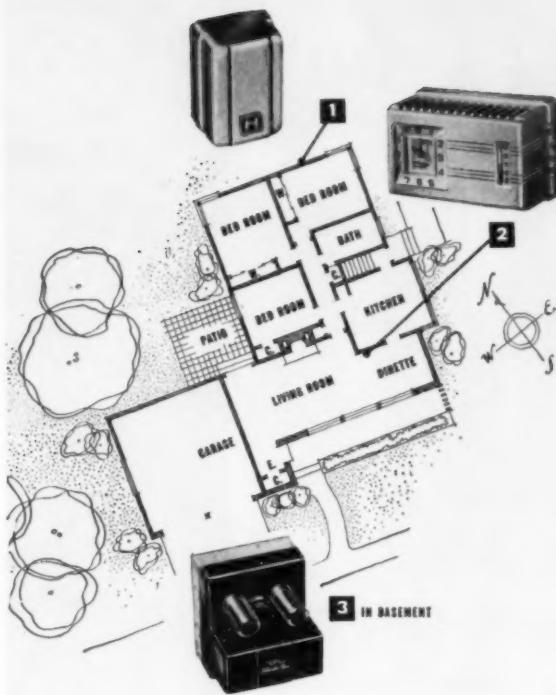
"Because then I can tell them how this control is actually installed *outside* the house; how it regulates the burner, automatically compensating for temperature changes *before* they are felt inside the house.

"I've also discovered a lot of customers can't get over the fact that there's nothing more than a tiny, supersensitive coil of wire inside a Weathercaster — instead of some complex mechanism they cannot understand.

"We usually wind up out-of-doors, discussing possible locations for it. And when the conversation gets to the point where they tell me where *they think* the Weathercaster belongs—brother, I know I've made another Moduflow sale!"



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How Electronic Moduflow Works

The Electronic Weathercaster (1), mounted outside the house, senses the outdoor temperature and by means of electronic signals continually tells the Electronic Clock Thermostat (2) what indoor temperature is required to maintain comfort. This Electronic Clock Thermostat, mounted in the living room, signals the Relay Amplifier (3) which automatically adjusts the heating plant to provide the proper amount of heat required to keep the home at just the right temperature—no matter how changeable the winter weather might be.

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Honeywell is using an extensive national advertising program—13 spreads in *LIFE* Magazine to help create demand for Moduflow. In addition, literature, displays and other material are available.



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Electronic Moduflow

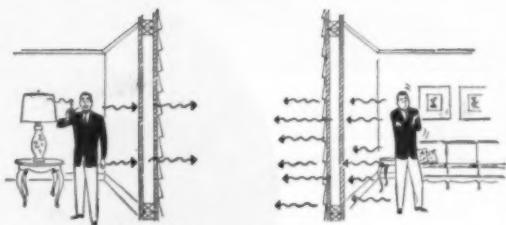
104 OFFICES ACROSS THE NATION



"Cold wall" problem solved by Moduflow

With a chilly outside temperature, occupants feel comfortable when indoor temperature is 71°. But as it drops, heat loss increases, so *higher* indoor temperature is needed to compensate for colder walls. Electronic Moduflow does this automatically by raising control point of indoor thermostat so more heat is supplied.

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Why people need varying temperatures

Tests show if indoor temperature is merely held constant when outdoor temperature falls, a person inside *feels* uncomfortable. As the walls of the room become colder, they "draw" increasing amounts of heat from the body.

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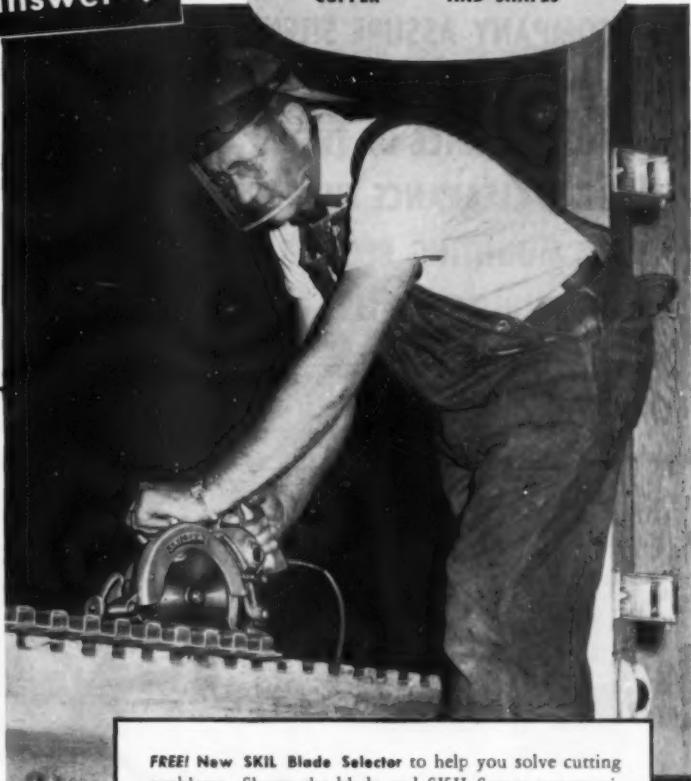
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... with 98 Specially Designed Stock Blades and Cut-Off Wheels to Cut Almost Any Material You Can Name!

... to Handle More Cutting Jobs Economically with Greater Money and Labor Saving than Ever Before.

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SAVE by eliminating inventory of special blades or cut-off wheels. Standard SKIL blades or wheels handle most jobs and are available quickly from your distributor.

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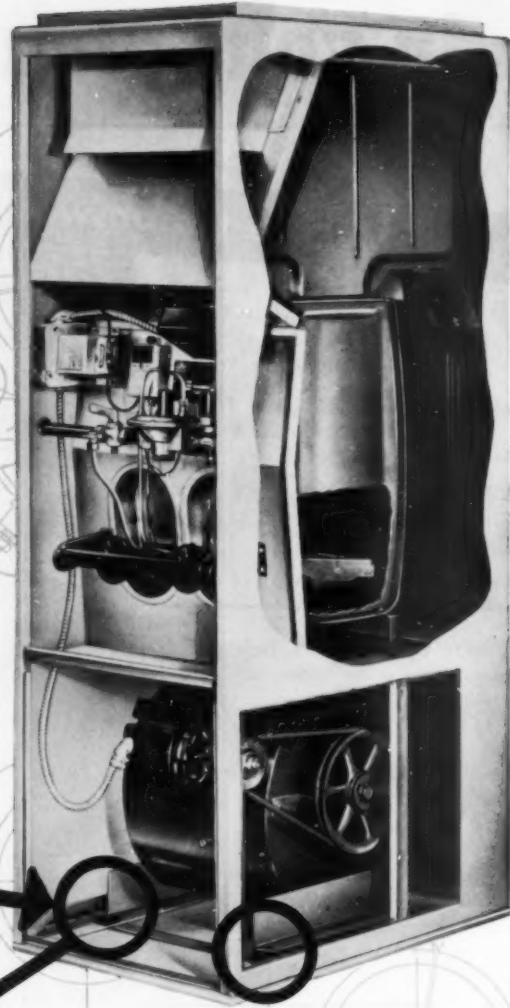
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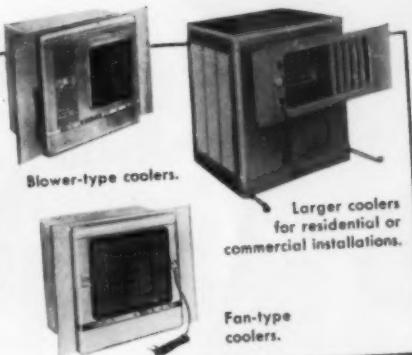


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Large-space, hard-selling magazine advertisements...a heavy schedule of spot radio...newspaper and TV advertising in selected local markets...all to help you sell more Palmer coolers!



top merchandising!

Big cooperative advertising allowances...effective selling folders and broadsides...point-of-sale display cards, window banners, die-cut floor displays...to make your store Sno-Breeze or Palmaire "headquarters!"



Mail the Coupon Now!

Cash in on 1954 sales with Palmer—America's No. 1 line of evaporative coolers. A complete line to meet every customer need, from small room coolers to the largest residential or commercial installation.

**PALMER MANUFACTURING CORPORATION
PHOENIX, ARIZONA**

Subsidiary of McCray Refrigerator Company, Inc.

Palmer Manufacturing Corporation
2200 W. Fillmore Street
Phoenix, Arizona

L-3

Please send me information on Palmer Coolers. I am interested in
 a Distributionship a Dealership.

Name.....

Company.....

Address.....

City and State.....

Sensational, New Axial Flow Ventilator

By **TRADE-WIND**



TREMENDOUS SUCTION . . . UNUSUALLY QUIET . . . PRIZE DESIGN!

Terrific performance at half the power—unmatched beauty—and tagged with a low L-O-W price is this new AXIAL FLOW ventilator which Trade-Wind has developed under wraps over the past three years.

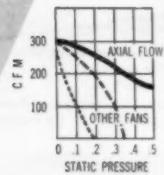
This revolutionary ALL NEW design now for the first time brings all the great advantages of straight-through axial air flow to the home ventilator field—and at a price that makes kitchen ventilation a BIG feature even for the lowest priced house.

In styling the AXIAL FLOW is as outstanding as its performance. Completely original with its deep intake scroll, it's a prize beauty created by one of America's top industrial designers.

There's nothing that comes close to matching this all-new axial flow development by Trade-Wind. See it, test it, compare it and you'll understand why the Trade-Wind AXIAL FLOW will sweep the light construction market.

REVOLUTIONARY PERFORMANCE of the AXIAL FLOW is indicated this chart. Note the ability to overcome duct resistance — characteristic of all Trade-Wind ventilators.

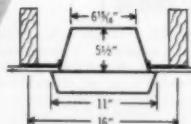
Write or Wire for Complete Information



STYLED BY HUNT LEWIS.
The outstanding originality of the Trade-Wind AXIAL FLOW styling was created by Hunt Lewis, nationally famous industrial designer.



THE NEW Trade-Wind has been designed for the easiest installation. The mounting bars are quickly nailed between joists, the conduit box is fully exposed and the duct work takes any 7" round pipe.



ORIGINATED BY TRADE-WIND MOTORFANS, INC., 5717 S. MAIN ST., LOS ANGELES 27, CALIF.

NEW
NEW
NEW

Approved by The American Gas Association



HEATWAVE
ANNOUNCES THE NEW "H" SERIES
Gas Fired
HORIZONTAL FURNACES



Specially
designed for space
saving installations, in homes without basements, in attic
or under floors, in service porches, attached garages, or
suspended from joists in homes with basements.

CHECK THESE OUTSTANDING FEATURES:

- ✓ COMPACT, requires minimum
of space
- ✓ QUIET OPERATION, rubber
mounted blower and motor
- ✓ CONTINUOUS WELD steel
heating element
- ✓ COMPLETELY ASSEMBLED
packaged unit, fire-tested
- ✓ CAST-IRON raised port
burners
- ✓ 10-YEAR FACTORY
WARRANTY

Priced to Meet Competition

Southwest Manufacturing Company

BOX 28

(A Subsidiary of the F. E. Myers & Bro. Co.)

AURORA, MO.

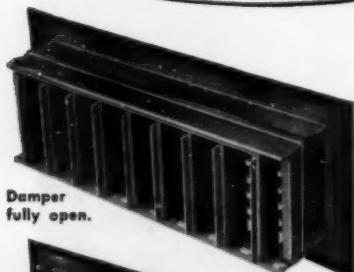


TRI-FLEX and AEROVANE REGISTERS equipped with

Opposed Blade Dampers

Showing TRI-FLEX T-647
Double Deflection Register
with Opposed Blade Damper

**KEY OPERATOR FOR
OPPOSED BLADE DAMPER**
Blades are regulated by
key operator which may
be removed or tapped per-
manently into place.



Damper
fully open.



Damper
partially open.



Damper
fully closed.



**TRI-FLEX Supply Air Registers and
AEROVANE Return Air Registers —**
specified and installed on important air conditioning
jobs — are constructed with opposed blade dampers.

This improved damper unit insures uniform distribution
of air over the entire face of the register . . . and provides positive
damper setting in any position from fully open to fully
closed regardless of system pressure. Set in a rigid steel frame,
blades are formed for extra strength and stiffness,
and overlap when closed, eliminating any possibility of
air leakage. Blades are regulated through the face of the register
by means of a key operator which may be removed
or tapped permanently into place.

*For complete information and size
selection data for TRI-FLEX and
AEROVANE Registers and Grilles,
write for a copy of Catalog No. 200.*

TUTTLE & BAILEY INC

NEW BRITAIN, CONNECTICUT



Makes All 4

Offer your customers heating units that bear the JZ trademark. It identifies home heating units that are easy to sell, make workman-like installation and guarantee customer satisfaction.

CENTRAL HEATERS

John Zink Central Gas Heaters are available in Vertical or Horizontal Forced air models. Suitable for installation in attic, closet, basement, utility room, under the floor, or as a suspended heater. Attractively finished.



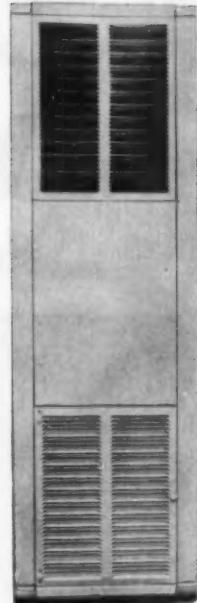
FLOOR FURNACES

John Zink Gas Fired floor furnaces are available in 5 conventional and short models with input ratings from 30,000 b.t.u./hr. to 85,000 b.t.u./hr. When equipped with safety pilot and automatic temperature control they are a complete heating plant in a package.



UNIT HEATER

The John Zink UHS Gas-fired fan type suspended heater is a complete, packaged unit and fully automatic. A. G. A. approved for natural, mixed, manufactured or LP Gas.



WALL HEATERS

John Zink's new WH-25 Recessed Wall Heater fits standard 2" x 4" stud partitions on 16" stud centers, is barely 58" high. Attractive modern design and finish. Available in standard and radiant styles.



John Zink now offers a new, highly efficient BLUE FLAME CONVERSION BURNER, for converting solid fuel furnaces to gas.

John Zink Burners are protected by more than 50 U. S. Letters of Patent.

It's easy to supply your customers from the John Zink line.

JOHN ZINK COMPANY

4401 South Peoria

Tulsa 18, Oklahoma



Put the WALES Fabricator through its paces at your plant!



Showing Wales Fabricator in new mobile unit for demonstration at your plant. See it operate at your plant before you buy any other type of hole punching, notching or nibbling equipment.

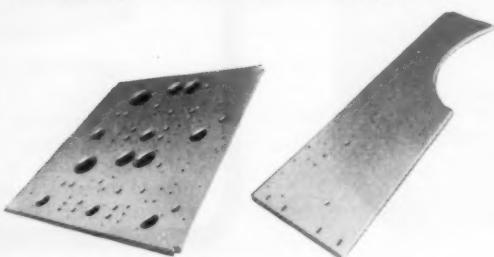


Showing Wales Tru-Edge Shear for circle and shaped cutting, beading and forming in the new mobile unit. Material is sheared, not punched.

Above new Wales-Strippit mobile unit (1 of 3) brings the Wales Fabricator right to your plant. You and other plant executives can use this unique Wales Fabricator to produce your own parts. Your time study men can evaluate its astounding money-savings, cost-saving efficiencies.

The Wales Fabricator is the only machine of its kind and is designed for rapid interchangeability for punching, notching and nibbling. Work from blueprints or operation sheets . . . no templates required. Can you match the Wales Fabricator time studies below?

See for yourself. Operate it. Put it through its paces. Write today for Wales Catalog 10-AA and an appointment for a demonstration at your plant.



An electronic chassis, 123/4" x 113/4" with 118 holes and 4 notches was completed including setup in only 32.65 minutes and subsequent pieces in only 6.44 MIN.

A part of a piece of farm equipment, 73/4" x 22" with 32 holes and nibbled cut-out was finished including setup in only 12.01 minutes, subsequent pieces in only . . . 2.32 MIN.

WALES-STRIPPIT CORPORATION

GEORGE F. WALES, Chairman

369 PAYNE AVE., NORTH TONAWANDA, N. Y.

(Between Buffalo and Niagara Falls)

WALES-STRIPPIT OF CANADA LTD., HAMILTON, ONTARIO

Specialists in Punching and Notching Equipment

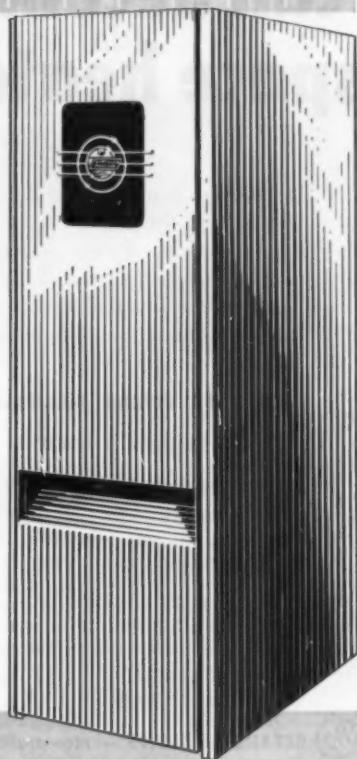
When you sell CHRYSLER AIRTEMP
you've got something extra to sell with . . .



**THE NAME helps you sell
the furnace...when it's
CHRYSLER AIRTEMP!**

The average person doesn't buy a heating system often. So, when the need does arise, he is naturally inclined toward the product with a name he knows—and knows he can trust. You will find that most people know the Chrysler Airtemp name, associate it with engineering leadership, have complete confidence in the quality of the products which carry it. As a Chrysler Airtemp Dealer, you don't have to sell the name as well as the furnace . . . the name *helps you sell* the furnace!

But name recognition and prestige make up only one of many important extras you have working for you when you sell Chrysler Airtemp Heating. The seven additional extras listed below will give you a more complete picture of the many selling helps which Chrysler Airtemp provides. To receive *all* the facts and figures on the most profitable opportunity for dealers which the heating industry can offer you today, just fill out and mail the convenient coupon reproduced at lower right.



New Hi-Bay Furnace—
in gas and oil-fired models



New Lo-Bay Furnace—
in gas and oil-fired models

**LOOK! 7 additional extras
you sell with . . . as a
Chrysler Airtemp Dealer**

Double Profit Opportunity—Chrysler Airtemp Air Conditioners so easy to install with Chrysler Airtemp Furnaces, give you the chance to sell Year 'Round Air Conditioning when you install the furnace or later—for a double profit.

Product Leadership—All-new Chrysler Airtemp Furnaces give you exclusive features that you can demonstrate to your prospects in terms of more efficient, more economical automatic heating.

Faster, Easier Installation—Amazing compactness of design, complete factory assembly and front location of flue outlet combine to permit faster and easier installation. You save valuable man-hours.

8-Year Warranty—on new, super-efficient, corrugated-design heat exchanger gives your customers

important additional confidence in their choice of Chrysler Airtemp Furnaces.

Smarter Modern Styling—All Chrysler Airtemp models feature new, smarter modern styling—with plenty of eye appeal for homeowners.

More National Advertising—to consumers and builders in leading publications is steadily pre-selling prospects on Chrysler Airtemp Heating and Air Conditioning, including many of the best prospects in your own trading area.

More Local Selling Helps—Chrysler Airtemp gives you a broad choice of tested and proved selling helps designed to work for you in your own market over your own name. New 20-minute full-color movie makes a terrific impression on every viewer!

**CHRYSLER
AIRTEMP**

HEATING • AIR CONDITIONING
for homes, business, industry

Airtemp Division, Chrysler Corporation, Dayton 1, Ohio

Airtemp Division, Chrysler Corporation
P.O. Box 1037, Dayton 1, Ohio

Please send us complete details concerning the
Chrysler Airtemp Franchise.

Name _____

Address _____ Phone _____

City _____ Zone _____ State _____



AA-3-54

This **AP** STANDARD EQUIPMENT comfort control

can become Your No. 1 space heater salesman!

Dealers say that for clinching the sale on oil-fired space heaters — this A-P Model 240 MT-YS Comfort Control can't be beat! And little wonder — it's designed to fit the standard A-P control valves used by the nation's leading oil space heater manufacturers. It can become your No. 1 salesman, too, because it assures 100% comfort and convenience for every oil space-heater customer.

LOOK AT THESE SALES-PROVED ADVANTAGES:

- AP** **INSTALLS IN ONLY 3 MINUTES** — just two screws hold it in place.
- AP** **NO WIRING, NO ELECTRICAL CONNECTIONS** — first cost is the only cost.
- AP** **ASSURES ROUND-THE-CLOCK HEATING COMFORT** — built-in thermostatic element prevents wasteful overheating or underheating.
- AP** **ONE-DIAL HEAT CONTROL** — user sets to comfort level desired then forgets it. Heater maintains even temperature automatically thereafter.
- AP** **100% GUARANTEED** — listed by Underwriters Laboratories.
- AP** **RETAILS AT \$12.95** — nice profit for you. The best buy in comfort on the market today.

No. 1 choice

for these 43 leading
oil-fired space heaters

ALLEN'S
BEYER
COLE HOT BLAST
COLEMAN
COLEMAN (Canada)
CREST (Canada)
CREST-AIRE (Canada)
CUSTOM AIRE
DOMESTIC
DUO-THERM
ENTERPRISE
ENTERPRISE (Canada)
ESTATE HEATROLA
EVEN-TEMP
FAWCETT TORRID-OIL (Canada)
FESS (Canada)
FINDLAY (Canada)
FLORENCE
H. C. LITTLE
HERCO HEAT FLO (Canada)

KEMAC (Canada)
LACO
LONERGAN
MAGIC CHEF
MARCHAND (Canada)
MONARCH
MONARCH (Canada)
MONOGRAM
NESCO
NORGE HEAT
PERFECTION
PREWAY
QUAKER
QUAKER (Canada)
SAFEWAY
SCOTSMAN
SILENT FLAME
SUPERFLAME
THARRINGTON
TORRIDAIRE
VIKIMATIC
WASHINGTON FRUGAL
WIZARD



Order stocks today
— WRITE FOR FULL DETAILS



For Air
Oil • Gases
Refrigeration

DEPENDABLE Controls

A-P CONTROLS CORPORATION

2452 N. 32nd Street, Milwaukee 45, Wis.
In Canada: A-P Controls Corp., Ltd. Cooksville, Ontario

NEW CHEVROLET TRUCKS

do more work per day . . . more work per dollar
on every type of hauling or delivery job!



Time and money are the two most important factors in any trucking job—and the new Chevrolet trucks for '54 are built to save more of both!

THEY SAVE YOU TIME ALL THE TIME

Whether you deliver door-to-door or haul state-to-state, new Chevrolet trucks will speed up your schedules. They bring you new hour-saving engine power—greatly increased acceleration and hill-climbing ability. You save time with greater safety . . . and *without* increasing your maximum road speeds. In traffic or on delivery routes, new truck Hydra-Matic transmission* saves time, and saves driving effort as well. It's the last word in no-shift truck driving.

THEY SAVE YOU MONEY IN EVERY WAY

Along with increased power, these great new trucks bring you increased operating economy. You enjoy hefty gasoline savings in every model, thanks to new high-compression performance. In addition, you save on upkeep and maintenance. That's because you get extra strength and stamina in drive line and chassis. There are heavier axle shafts in 2-ton models, newly designed clutches and stronger frames in all models.

See your Chevrolet dealer for all the facts about the "savingest" Chevrolet Advance-Design trucks ever built! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

MOST TRUSTWORTHY TRUCKS ON ANY JOB!



CHEVROLET ADVANCE-DESIGN TRUCK FEATURES

DUAL-SHOE PARKING BRAKE—greater holding ability on heavy-duty models. **NEW, LARGER UNIT-DESIGNED PICKUP AND PLATFORM STAKE BODIES**—give increased load space. **COMFORTMASTER CAB**—offers greater comfort, convenience and safety. **PANORAMIC WINDSHIELD**—for increased driver vision. **WIDE-BASE WHEELS**—for increased tire mileage. **BALL-GEAR STEERING**—easier, safer handling. **ADVANCE-DESIGN STYLING**—rugged, handsome appearance.

*Optional at extra cost. Ride Control Seat is available on all cab models, "Jobmaster 261" engine on 2-ton models, truck Hydra-Matic transmission on 1/2-, 3/4- and 1-ton models.

Your job is easier
when you have

the **RIGHT** connection

INTERNATIONAL
SNAP-LOCK

STANDARDIZED PIPE AND FITTINGS

For FORCED AIR,
PERIMETER, SMALL PIPE
and GRAVITY SYSTEMS

International Snap-Lock fittings—a big new line, complete from boots to ducts—are made to fit up *tighter* and *faster*... save you time and labor. Precision-made Inter-Lock feature gives quick, easy assembly. Highest-quality construction. Completely packaged, fully standardized—no installation headaches. For *all* systems. Call your distributor—or write:

International Heater Co., Utica 2, N.Y.

and the **RIGHT** line

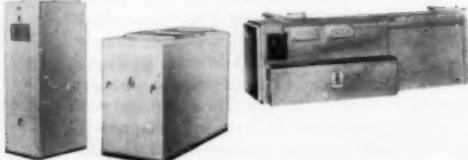
International Economy Units

simplify year round

Home Air Conditioning Installations

WARM AIR SYSTEMS

oil • gas • coal



SUMMER AIR CONDITIONERS

low cost central cooling
for the average home



In the big International Economy line, you always have exactly the right furnace for every winter heating need. When the customer is ready for year-round Air Conditioning, you simply install a new Economy Summer Air Conditioner. These units, with their own built-in blowers, are quickly and easily installed into present (or new) warm air systems. Customers really go for this *low cost* way of enjoying Air Conditioned Comfort every day of the year!

Something to think about...

With every International Economy Warm Air System you install, you automatically have the inside track for *more* profits—because the homeowner who relied on you for winter warmth, will naturally turn to you for summer cooling!



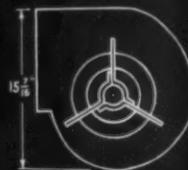
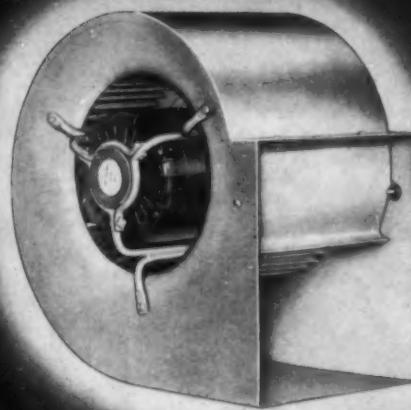
**INTERNATIONAL
HEATER CO., UTICA 2, N.Y.**

WESTERN WAREHOUSE • CHICAGO, ILLINOIS

the newest *Brundage* development . . .



INSTALLS IN
ANY POSITION



*ONLY 10-1/2" x 15" x 15-7/16"
YET IT DELIVERS 1150 CFM AT .30 STATIC

*Direct Drive Units in higher and lower capacities also available . . . information upon request.

THE *NEW* BRUNDAGE 9" DIRECT DRIVE BLOWER

Here is one case where the biggest value comes in the smallest possible package. This new 9" Brundage Blower combines extremely high air handling capacity with a compactness and flexibility to make every cubic inch of equipment work to its fullest.

The internally mounted motor not only insures space economy and, by eliminating all belts and pulleys, it cuts the cost, ends a major maintenance problem . . . a design simplification that pays dividends in many, many years of superior service. To give you complete freedom of design, the 9" Brundage Blower may be fur-

nished with mounting legs which allow you to place the unit in any convenient position . . . with full assurance of peak operating efficiency.

Test a Brundage 9" Blower in your own engineering department. Learn how Brundage design, construction and performance can add a new measure of quality to your products. We will be happy to provide everything you need to make a careful evaluation.

Ask about the Brundage production program. It is planned to simplify your inventory problems and free capital which might be tied up in blower stocks.



BLOWER-FILTER UNITS



BELT DRIVE BLOWERS



BLOWER EXHAUSTERS



SPECIAL BLOWER CABINET ASSEMBLIES

"INTEGRITY IS OUR TRADITION"

Brundage
COMPANY

PRODUCTS OF
CHARACTER

503 NORTH PARK STREET
KALAMAZOO, MICHIGAN

We would like to have further data on:

Direct Drive Blowers Belt Drive Blowers

NAME _____

TITLE _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

WHAT THE ASSOCIATIONS ARE DOING



ATTENDING the Chicago Warm Air Indoor Comfort Conference were warm air heating dealers, government representatives and members of the gas and electric industries

Midwestern Dealers Gather in Chicago

THE CHICAGO WARM AIR Indoor Comfort Conference was held on January 18 and 19 at the Graemere Hotel. There were 238 registered warm air heating and residential cooling dealers and their employees attending, many of them from Missouri, Wisconsin, Iowa and Indiana. Also present were representatives of the gas and electric utility companies, the Federal Housing Authority and the building department of the City of Chicago.

Both heating and cooling were covered at the conference — with one day devoted to each subject and its application to residential comfort. In each case, load estimating, duct sizing, air distribution and equipment adjustment were treated. Practical heating and cooling applications were illustrated by a sample problem in which year 'round comfort was provided for a specific home.

Guy Voorhees conducted the conference and George Kalvog acted as chairman for the Chicago group and for the National Warm Air Heating and Air Conditioning Association, which co-sponsored the meeting.

Kalamazoo Invites Wholesalers

AT A RECENT MEETING of the Kalamazoo Sheet Metal, Roofing, Heating and Air Conditioning Contractors' Association, Glen Rynbrand moved that the board of directors take the necessary steps to change the bylaws to permit wholesaler organizations to become associate members, such members to pay the same membership rates as contractors but to have no voting power. This motion was passed.

Bryant Kistler, president, has recently appointed a number of members to serve on various committees: John

DeHaan, Glen Rynbrand and Jack Van Dalson, legal committee; Lee Johnson, advertising; Glen Rynbrand, Richard Nipe and John DeHaan, code; E. J. French and Lewis Andrus, program; Lewis Andrus, membership; Ray Wolfe and Charles Williams, finance; Haroly Guernsey, trade protection; Dick Haas, John Wiessner and Bernard Sehy, yellow page advertising (simplifying and reducing costs).

Guests at the association's March meeting were members of the Home Builders Association of Kalamazoo. C. W. Nessell, Minneapolis-Honeywell Regulator Co., was the speaker.

New Officers for New York Association

THE ROOFING AND SHEET METAL Crafts Institute, New York City, reports that the following officers have been elected to serve for the year 1954: president, Louis Moskowitz; vice president, Irving Katz; treasurer, Abraham Gelieber; recording secretary, Richard H. Freyberg; corresponding secretary, Walter Propper; sergeant at arms, Cornelius Muller. Directors are Irving Popick, Irving Koppelson, Cornelius Muller, Sam Feinberg, Bernard Fisher and Nathan Halpern.

The association's monthly newspaper, the Institute Ticker, reports an address on overhead and its relation to the break-even point, which was given by J. Henry Flynn before the New England Approved Roofers' Association. He listed a number of specific problems found in the roofing industry — including confused cost accounting, overhead problems, poor records, compensation methods, trucks and truck costs and price structure. Referring to

Coming Events

March 15-16 — Raleigh Indoor Comfort Conference. H. L. Goodwin, Chairman, P. O. Box 1050, Durham, N. C.

March 19-20 — Birmingham Indoor Comfort Conference. Geo. F. Wheelock, Chairman, 3017-25 2nd Ave., S., Birmingham 5.

March 29-30 — Milwaukee Indoor Comfort Conference. F. J. Engler, Chairman, 323 W. Juneau Ave., Milwaukee 8.

Apr. 1-2 — Minneapolis Indoor Comfort Conference. A. R. Rees, Chairman, 2412 University Ave., S. E., Minneapolis 14.

April 2-3 — Sheet Metal, Air Conditioning and Roofing Contractors' Association of Pennsylvania, Annual Convention, Berkshire Hotel, Reading. E. W. Liebermann, Secretary, 1411 Merchant St., Ambridge, Pa.

Apr. 8-9 — Portland Indoor Comfort Conference. George D. Montag, Chairman, 5329 N. E. Sandy Blvd., Portland 13, Ore.

Apr. 12-13 — San Francisco Indoor Comfort Conference. J. F. Deane, Chairman, 1045 Evans Ave., San Francisco 24.

Apr. 15-16 — Los Angeles Indoor Comfort Conference. Leo Hungerford, Chairman, 4851 S. Alameda, Los Angeles.

April 20-22 — Sheet Metal Contractors Association of Illinois, Inc., Annual Convention. Abraham Lincoln Hotel, Springfield. E. A. Schmidt, Secretary, 1210 E. Laurel St., Springfield.

Apr. 22-23 — Denver Indoor Comfort Conference. J. H. Singleton, Chairman, 1830 Market St., Denver 2.

April 30-May 1 — Roofing and Sheet Metal Contractors Association of Florida, Annual Convention. Monte Carlo Hotel, Miami Beach. Robert Raymond, Secretary, P. O. Box 6331, Coral Gables, Fla.

May 10-12 — Sheet Metal Contractors National Association, 11th Annual Convention. William Penn Hotel, Pittsburgh. J. D. Wilder, Executive Secretary, 170 Division St., Elgin, Ill.

May 16-20 — Oil Heat Exposition sponsored by Oil-Heat Institute, Commercial Museum, Philadelphia. R. H. L. Becker, Managing Director, 500 5th Ave., New York 36.

June 10-12 — Roofing and Sheet Metal Contractors Association of Georgia, Annual Convention. General Oglethorpe Hotel, Savannah, Ga. B. L. Noblitt, Secretary, P. O. Box 1196, Augusta.

June 17-20 — Carolinas Roofing and Sheet Metal Contractors Association, Annual Convention. Grove Park Inn, Asheville, N. C. W. H. Arthur, Jr., Chairman, 225 Patton, Asheville.

June 28-30 — American Society of Heating and Ventilating Engineers, Semi-Annual Meeting. New Ocean House, Swampscott, Mass. A. V. Hutchinson, Secretary, 62 Worth St., New York 13.

July 11-14 — American Society of Refrigerating Engineers, 41st Semi-Annual Meeting. Hotel Olympic, Seattle. M. C. Turpin, Secretary, 40 W. 40th St., New York 18.

the lack of uniform standards for estimating and poor understanding of the problem of overhead, he cited the case of a reroofing job in the East. Of 10 bids received, he said, the highest was \$16,900 and the lowest \$6000. Three of the firms who submitted bids afterwards reviewed the estimates and found that \$5288 worth of material and \$5100 worth of labor would be required to perform the work. Yet three of the firms not only were below this figure required for direct labor and material, but allowed nothing for overhead or profit.

Los Angeles Group Elects Officers

OFFICERS ELECTED at a recent meeting of the Institute of Gas Heating Industries to serve for the year 1954 are: president, W. E. Sales; vice president, Basil Sugden; and treasurer, Robert Johnson. New members of the board of directors are Tom Pinatelli, Ing Remen, Richard B. Sutphen, Martin N. Graham, Glenn Barnes, and Leo Hungerford (retiring president).

Speaker at the January meeting was C. W. Nessell.

chairman of the National Warm Air Heating and Air Conditioning Association's field investigation committee, who discussed Researching Mild Climate Heating.

Carolinas Group Holds Mid-Year Meeting

THE MIDWINTER MEETING of the Carolinas Roofing and Sheet Metal Contractors Association was held in the Riddick Engineering Building at North Carolina State College. Discussed at the meeting were problems facing the industry involving bonds, guarantees, public liability and property damage insurance, specifications, etc. W. H. Arthur, Jr., chairman of the 1954 annual convention to be held at the Grove Park Inn, Asheville, N. C., on June 17 to 20, gave a short report on the progress being made on plans for the meeting.

Officers and directors of the suppliers' division of the association met recently to make entertainment plans for the forthcoming convention. Events planned include a

(Please turn to page 154)



*Pat. Pending

These are Perfection's field representatives whose sole job is to make *your* job of selling furnaces easier. They'll tell you how you can "checkmate" competition with . . .

1. **Regulaire*** . . . the only *real* exclusive in the heating business.
2. "On-the-spot" sales assistance by experienced Perfection men.
3. Protection from cut-rate or factory competition in your territory.

Companion air conditioning unit helps you sell a *complete* "comfort" package.

Write us. Perfection Stove Co., 7534-B Platt Ave., Cleveland 4, Ohio.

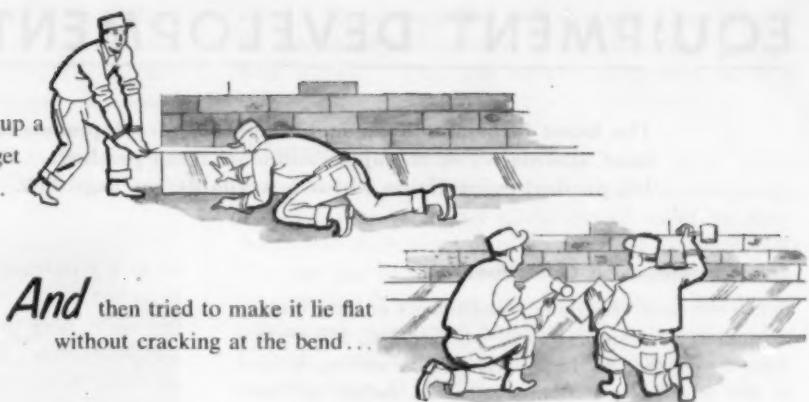
YOUR HOME DESERVES
Perfection

 PORTABLE HEATERS



FURNACES • HOME HEATERS • RANGES • AIR CONDITIONERS • WATER HEATERS

If you've ever yanked up a built-in cap flashing to get at the base flashing...



And then tried to make it lie flat without cracking at the bend...

Then you know why it's better to use the new
CHASE® one-piece thru-wall FLASHING and CAP FLASHING RECEIVER!



Because you can use cold rolled copper for cap flashing. You can insert it easily after the base flashing is in... without the use of plugs, fillers, or wedges! The receiver stays open, even under the weight of the finished wall.

Send today for specifications and details.

Chase  **BRASS & COPPER**

WATERBURY 20, CONNECTICUT • SUBSIDIARY OF KENNECOTT COPPER CORPORATION

The Nation's Headquarters for Brass & Copper

Albany Atlanta Boston Cleveland Detroit Kansas City, Mo. Minneapolis Newark New Orleans New York Philadelphia Providence Rochester St. Louis San Francisco Seattle Waterbury

(factory office only)

Chase Brass & Copper Co., Dept. AA 354
Waterbury 20, Conn.

Please send me your free folder on the new Chase One-Piece Thru-Wall Copper Flashing and Cap Flashing Receiver.

Name _____

Position _____

Firm _____

Street _____

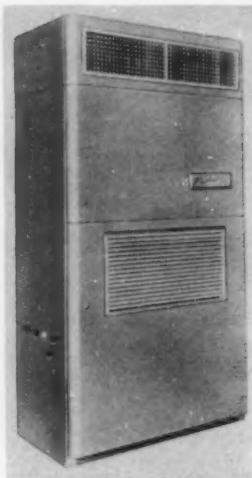
City _____ State _____

EQUIPMENT DEVELOPMENTS

The latest information on manufacturers' developments is presented here with brief summaries of the applications of these products. For new literature giving product information which is available, see page 176.

Self-Contained Air Conditioners

SELF-CONTAINED electric air conditioners in three cooling capacities: 3, 5 and 7½ tons — Servel, Inc., 119 Morton Ave., Evansville 20, Ind. The plenum section, located at the top, has adjustable grilles to deflect air both vertically and horizontally. The section can be omitted when a remote installation is made. The cooling section contains the fluted-fin cooling coil made of seamless copper tube, a centrifugal blower with forward curved blades, and filters. Overall dimensions for the three sizes are 75 in. high × 38 in. wide × 20½ in. deep; 83 in. high × 44½ in. wide × 22½ in. deep; and 92 in. high × 48½ in. wide × 26½ in. deep.



Above: Roof Ventilator

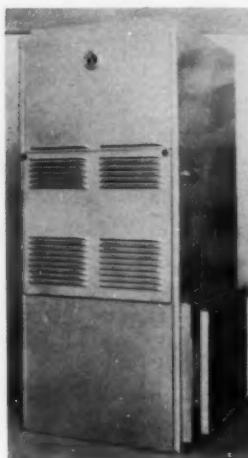


Left: Conditioner

or in a through-the-wall installation, the chassis sliding in or out of the casing. All three units (½, ¾ and 1 ton sizes) have the same room cabinet, outside cabinet and filter sizes. The outside air intake and the exhaust air dampers have been separated into two controls. Ratings for the three sizes are 6020, 9040 and 12,050 Btu.

Oil or Gas Fired Highboy Furnace

MODEL 2438 OIL FIRED highboy winter air conditioner designed for compactness — Rheem Mfg. Co., 7600 S. Kedzie Ave., Chicago. It can be converted to gas by replacing the oil burner with a gas burner unit. The furnace is available in 85,000, 100,000 and 120,000 Btu bonnet output capacities. A pressure atomizing type burner is used as is a "flame-shaped" combustion chamber. The all-steel heat exchanger is electrically welded gas-tight.



Above: Dehumidifier



Left: Highboy Furnace

Power Roof Ventilators

NEW LINE of all-aluminum power roof ventilators featuring a low silhouette — W. R. Carnes Co., S. Main St., Verona, Wis. Fan wheels are non-sparking, the company states. Backwardly inclined centrifugal type wheels in sizes from 4 to 36 in. provide capacities from 100 to over 15,000 cfm, while axial flow fans in sizes from 10 through 36 in. offer capacities from 400 to over 17,000 cfm. There is a wide range of motor sizes. Accessories available include automatic and motorized back draft dampers.

Window Type Conditioners

REDESIGNED WINDOW type room conditioners with slide-in chassis, smaller room cabinet, uniform cabinet size, hidden controls and improved dampers — Crane Co., 836 S. Michigan Ave., Chicago 5. The outdoor casing may be permanently installed in a double hung window

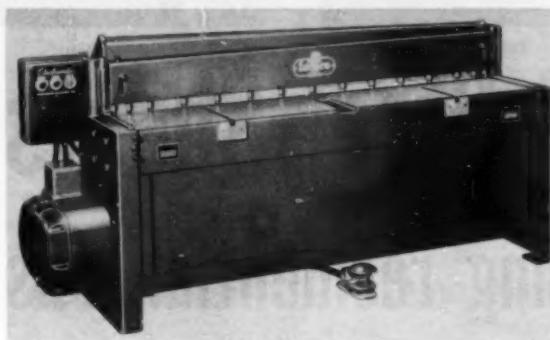
Dehumidifier

"OASIS" DEHUMIDIFIER featuring new cabinet styling and a larger compressor — Ebco Mfg. Co., 401 W. Town St., Columbus 8, Ohio. The cabinet (of heavy gage steel) is slightly larger and there are new horizontal louvers and rounded corners. An oversize refrigeration condenser has been added along with new vertical copper tube coils designed for more rapid moisture condensation. There is a fiber glass moisture drawer. The dehumidifier weighs 55 lb and the fan and compressor motor are permanently oil sealed at the factory.

Squaring Shears

REDESIGNED LINE of squaring shears expanded to 18 models, available in eight power driven, six foot, and

four air type shears — Fameo Machine Co., 3100 Sheridan Rd., Kenosha, Wis. Shears are of rigid, all-steel, box type construction, and features include completely reversible four-edge alloy steel knives and an all-steel bed and upper knife frame of box type construction designed to eliminate spring. Capacities for the foot shears are 16 and 18 gage mild steel in 36, 42 and 52 in.



widths and 18 gage in 22, 30 and 72 in. widths, for the air shears, 16 gage mild steel in 36, 42, 52 in. and 72 in. widths. The new power driven line features an electrically controlled nine-point jaw clutch which in four of the eight models is combined with a gear transmission which provides power to shear 14 and 16 gage mild steel in 36, 42, 52 and 72 in. widths. The other four power driven models shear 18 and 20 gage mild steel in 36, 42, 52 and 72 in. widths.

Axial Flow Ventilator

VENTILATOR DESIGNED for low cost, which utilizes the axial flow principle of air movement and has a capacity of 300 cfm — Trade-Wind Motorfans, Inc., 5725 S. Main St., Los Angeles 37. The deep intake scroll is 11 in. in diameter and is designed to resemble the nose of jet type aircraft. The scroll incorporates a drip-proof feature. The fan operates with a minimum of noise, the company states. The housing measures 5 1/2 in. in height, permitting installation in restricted joist spaces. Since it features straight-through air flow, vertical installations can be made without requiring elbows in the ductwork. Three air foil shaped blades or runners are mounted on a hub of relatively large diameter, concentrating the work on the air to the outer part of the runners where the greatest pressure is produced, according to the company.

Vane Runner

"ALL-TITE" VANE RUNNER designed to provide a rapid and inexpensive method for installing vanes in the square elbows of air conditioning and forced draft heating ducts — Elgen Mfg. Corp., 41-34 39th St., Long Island City 4, N. Y. The runner has slotted knobs of 24 gage galvanized steel, engineered to accommodate either single or double blades. It is designed to eliminate the need for punching, notching, riveting, spotwelding and layout and requires no special chisels or tools, the company

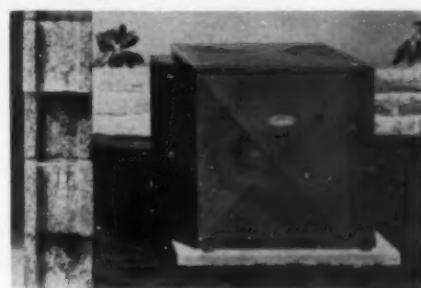
states. Vanes are locked with shears or a hammer and the assembled unit is fitted in the elbow and fastened with screws. The vane runner is supplied in 8 ft lengths.

Window Air Conditioner

REDESIGNED 1/2 hp "Vornado" window type conditioner featuring damper control knobs located under the filter door — O. A. Sutton Corp., 1812 W. 2nd St., Wichita 2. The unit has been streamlined in appearance, the company states. It provides cooling, ventilating, air circulating, dehumidifying, filtering and exhausting. The "Vortex" control is designed to combine a high velocity air movement of 1500 fpm with maximum cooling to move air up to 30 ft into a room. The air circulator can be rotated 360 deg and tilted up or down.

Year 'Round Conditioners

"WEATHERMAKER" year 'round conditioners in a new air cooled model offering 2 tons of cooling and new 3 ton combinations available with either air cooled or water cooled refrigeration — Carrier Corp., 308 S. Geddes St., Syracuse 1. Water cooled models also are available in 5 and 7 1/2 ton capacities. The units provide summer



cooling and removal of excess moisture, and winter heating and filter cleaned air circulation throughout the home. The 2 ton sizes occupy 1 sq yd of floor space; the 3 ton sizes, 1 1/2 sq yd. The line is intended for installation in new or existing homes. The 2 ton base unit (including burner and decorative front cover) is 37 3/8 in. wide, 37 1/8 in. deep and 62 in. high. The air cooled condenser for this unit is 26 5/8 in. high. The 3 ton base unit is 46 in. wide, 45 3/4 in. deep and 63 1/2 in. high. The air cooled condenser height is 26 5/8 in.

Thermostat for Room Heaters, Conditioners

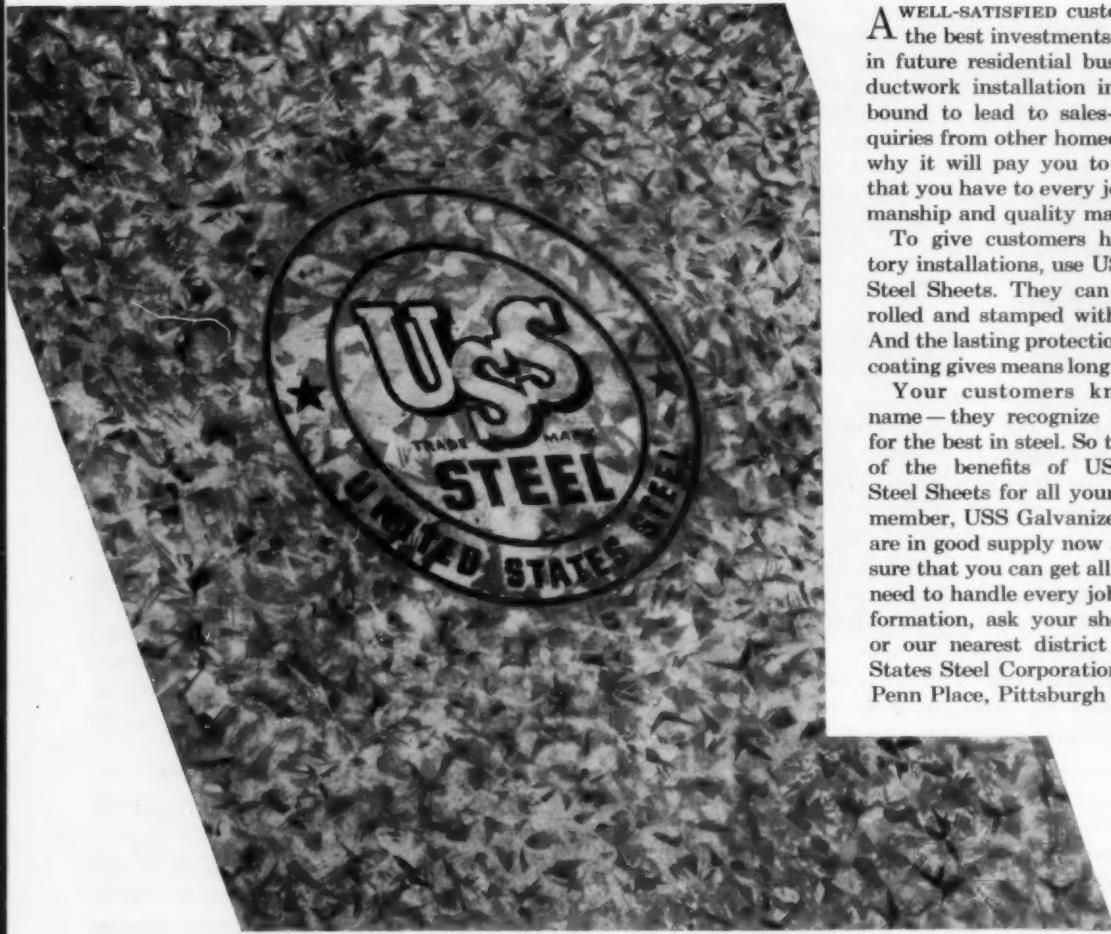
"ROOM-TEMP" thermostat for controlling furnaces, air conditioners, unit heaters, radiant heat panels, and air blast heaters — Westinghouse Electric Corp., P. O. Box 2099, Pittsburgh 30. It can handle currents as high as 30 amp, 125 or 250 volts, without a circuit relay or contactor, the company states. The thermostat can be mounted on the appliance chassis with one or more rivets or screws and has terminals designed for easy accessibility. Positive snap action eliminates interference with

(Please turn to page 158)



USS Galvanized Steel Sheets

—for customer-pleasing residential jobs



A WELL-SATISFIED customer is one of the best investments you can make in future residential business. A good ductwork installation in one home is bound to lead to sales-possibility inquiries from other homeowners. That's why it will pay you to give the best that you have to every job—fine workmanship and quality materials.

To give customers highly satisfactory installations, use USS Galvanized Steel Sheets. They can be cut, bent, rolled and stamped without difficulty. And the lasting protection that the zinc coating gives means long life for the job.

Your customers know the USS name—they recognize that it stands for the best in steel. So take advantage of the benefits of USS Galvanized Steel Sheets for all your jobs. And remember, USS Galvanized Steel Sheets are in good supply now... you can be sure that you can get all the sheets you need to handle every job. For more information, ask your sheet distributor or our nearest district office. United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pa.



UNITED STATES STEEL CORPORATION, PITTSBURGH • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. • UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS GALVANIZED STEEL SHEETS

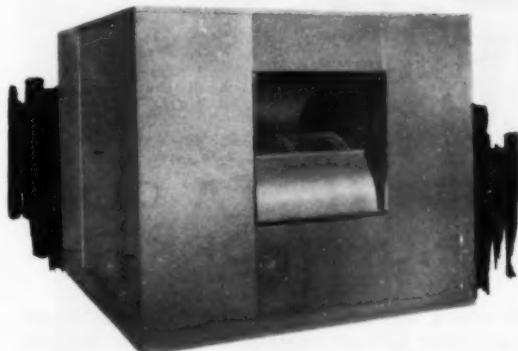
UNITED STATES STEEL

Alen EVAPORATIVE COOLERS

"Engineered for the task of giving cooling comfort"

BEST in VALUES

LOW initial cost . . . **LOW** installation and maintenance costs



SPRAY-WHEEL TYPE

Air-Washer

offers exact guaranteed
cooling efficiency

In all standard blower capacities

SPECIAL FEATURES:

- Flinger wheel does proper job of water atomizing
- Z-pad engineering design means cooler, filtered air always
- Pads rest on drain shelf which prevents return of water to lower pads (gives correct moisture content to entire pad area)
- Blower standard-frame motor equipped with variable-pitch pulley

For complete details on Alen Evaporative
coolers call or write



DRIP-PAD TYPE

Evaporative Coolers

—available in all standard blower
capacities to meet every
cooling requirement

SCIENTIFICALLY DESIGNED for longer life and to give ample
capacity for any requirement.



Evaporative Cooler Cabinets:
of hot-dipped galvanized sheet metal

INTERIORS: entirely treated with etching type Zinc Chromate primer
plus two applications of black, water-proof, rust-resistant coatings baked-on.
Areas constantly subjected to moisture specially treated for long life. Interior
working parts treated with new, longer-life, rust and corrosion-resistant, dipped
and baked coating (found only in Alen coolers)



Alen PRODUCTS

DALLAS, TEXAS

MFG. BY
(Comfort Products Corp.)

2220 S. Lamesa



YOUR OWN KITCHEN HAS A CLUE TO SALES-STIMULATING BRIGHTWORK

The clue is the ease with which the lady of your house cleans ENDURO Stainless Steel pots, pans and other kitchen equipment. A simple washing with soap and water restores ENDURO surfaces to their original gleaming luster. Sometimes a warm water rinse is sufficient.

Translate this cleanability into terms of sales-stimulating ENDURO brightwork. This brightwork adds eye appeal to your product. It stays bright for the life of the product. It resists rust and corrosion; does not tarnish. ENDURO brightwork is easy to clean and to keep clean. It can go to work for you *now*. Because ENDURO is solid stainless all the way through, there is no chipping, cracking or peeling of the surface. You can stamp it, spin it, bend it, roll-form it, weld it, solder it—without difficulty. And, compared with fabricating, then plating, then polishing, ENDURO offers real time- and cost-saving advantages.

ENDURO brightwork may be just the ticket for adding sales stimulus to your product. Why not talk it over with our metallurgists? They will help you choose the proper types of ENDURO and will help you work out the fabricating procedures. There's no obligation. Just write:

REPUBLIC STEEL CORPORATION
Alloy Steel Division • Massillon, Ohio
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N.Y.



The finest fabrics are safe for laundering in washing machine tubs made of ENDURO Stainless Steel. ENDURO equipment presents a smooth, hard surface. Residue and contaminants have little foothold. And, ENDURO stubbornly resists rust and corrosion.

REPUBLIC
ENDURO STAINLESS STEEL



Other Republic Products include Carbon and Alloy Steels — Titanium — Pipe, Sheets, Strip, Bars, Wire, Pig Iron, Bolts and Nuts, Tubing

Gas Lo-Boy
4 Models
70-140,000 BTU



Oil Lo-Boy
3 Models
100-145,000 BTU



Gas Hi-Boy
4 Models
70-140,000 BTU



Gas Horizontal
5 Models
60-140,000 BTU

Oil Horizontal
2 Models
105-140,000 BTU



THE
WILLIAMSON
HEATER COMPANY

Announces

a brand new
warm air
furnace line



Oil Hi-Boy
3 Models
100-145,000 BTU



Oil Counter-Flo
3 Models
100-145,000 BTU

These new WILLIAMSON Assembled Warm Air Furnaces are designed to meet dealer demands for a quality *low-cost* unit, easily and quickly installed in limited space.

- Hi-Boy, Lo-Boy, Counter-Flo and Horizontal units
- Pre-wired and pre-assembled . . . 10 minute installation
- Gas or Oil convertible—just change burner package
- Units occupying less than two feet square
- Capacities from 60,000 to 145,000 BTU
- Competitively priced—Nationally advertised
- This is a THIRD line . . . additional to the famous FLO-WARM and GASAVER-OILSAVER lines
- 2, 3, and 5 ton companion cooling units also available

Make your next furnace sale . . . and many others to follow . . . easier and faster with the new WILLIAMSON Assembled Line Furnaces!

THE WILLIAMSON HEATER CO., 3511 Madison Road, Cincinnati 9, Ohio

Gentlemen: Yes, rush me details on the complete WILLIAMSON Line.

Name. _____ Title. _____

Firm. _____

Address. _____

City. _____ Zone. _____ State. _____



Fluid Heat advertising appears month after month in the national publications most read by homeowners . . . such publications as *Saturday Evening Post*, *Better Homes & Gardens*, *American Home*, *Living for Young Homemakers*, *House & Garden* and *House Beautiful*. This hard-selling advertising campaign pre-sells your prospects on the convenience, comfort and quality of Fluid Heat . . . directs customers to your store, customers who will be interested in Fluid Heat, receptive to your sales effort.

And in addition to this tremendous national advertising program, Fluid Heat provides you with good-looking literature, booklets, folders and envelope stuffers . . . and a retail sales manual to help your men tell a complete and logical sales story.



Fluid Heat's complete line of rotary equipment and warm air furnaces. The wall-flame rotary burner, for instance, has set a new standard of heating efficiency and economy . . . efficiency and economy that's easy to recognize, easy to sell. This rotary burner, along with Fluid Heat's complete line of pressure burners and boiler burner units, make it possible for you to offer your customers the most complete line of oil-fired equipment in the heating industry . . . the best heating unit for any installation.

So investigate the Fluid Heat line . . . the line that will put you in the strongest possible competitive position . . . the line that *you* can sell at a profit. For further information and dealership details write: ANCHOR POST PRODUCTS, INC., Fluid Heat Division, 6720 Eastern Avenue, Baltimore 24, Md., or Coolbaugh Street, Red Oak, Iowa.

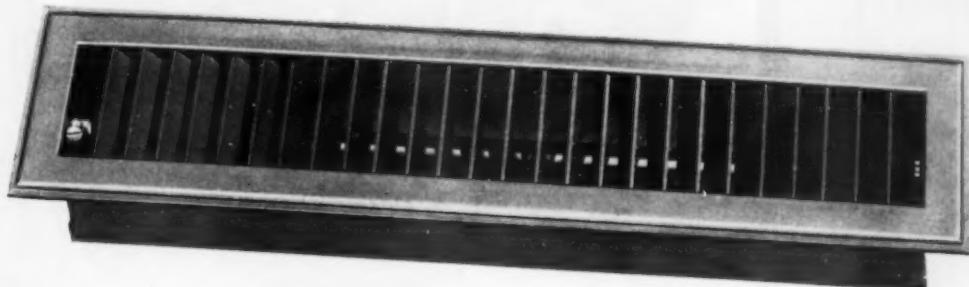
fluid heat
AUTOMATIC HEATING EQUIPMENT
"WORLD'S ECONOMY CHAMPION"

Division of ANCHOR POST PRODUCTS, Inc.
Sales Offices and Factories: Baltimore, Md. and Red Oak, Iowa



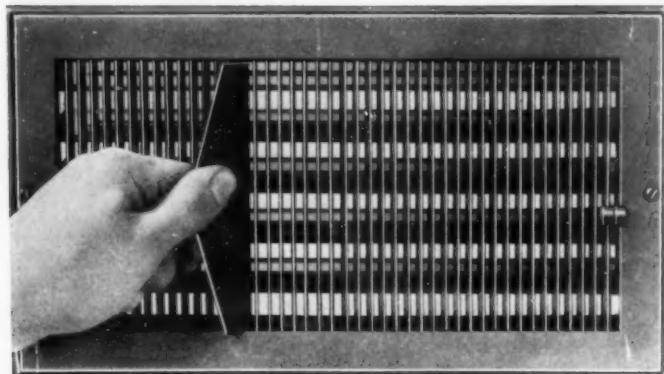
Have You Made The Wise Decision? If so — It's U. S. for '54

No.
410
U. S. FLOOR
DIFFUSER
REGISTER



Few registers have ever met with the quick and broad acceptance of this U. S. No. 410. It gives a fast-spreading wide diffusion of the air stream to blanket cold window and wall surfaces, also directs air sufficiently outward to avoid discoloration. It's trim and neat in

appearance — narrow $\frac{5}{8}$ " margins. And note the set screw for balancing at the register without interfering with its closing. U. S. also makes out-of-wall baseboard diffusers (No. 132 $\frac{1}{4}$ and No. 133 $\frac{3}{4}$) and in-the-wall diffuser No. 1356.



No.
256
U. S. MULTI-VALVE
AIR-CONDITIONING REGISTER

Style and performance leader of the popular price A-C registers. Gives you 4-way directional control of air flow. Back valve design permits air intake from *any* direction. Has set-lock balancing attachment. The Most Flexible and All-Purpose Type of Air-Conditioning register. No Size too Large. No Size too Small.

Watch Next Month for the Pre-View and announcement of the industry's finest type of continuous "strip" baseboard registers.



UNITED STATES REGISTER COMPANY

BATTLE CREEK, MICHIGAN

MINNEAPOLIS • KANSAS CITY • ALBANY
SOLD BY LEADING JOBBERS FROM COAST TO COAST



Discover why CLARAGE is Superior Fan Equipment for ...

**Air Conditioning Units, Cooling
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WHEELS

Cast iron hubs have large flanges which stiffen centerplate. Wide range of stock bores. Dynamically balanced. Special constructions available.

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Die formed and designed for full rated performance. Can be hot dipped galvanized for protection against moisture.

COMPLETE FANS

Eleven standard sizes — capacities from 200 to 10,000 cfm. Built of heavier gauge steel than common practice for longer, better service.

KNOWN quality pays off! You too can profit by using Clarage Type DF fan equipment.

Clarge wheels, housings, and complete fans have proved their worth to numerous manufacturers. Here is equipment designed right, built right to operate year after year with minimum attention.

For full particulars, including dimensions and capacity ratings, request Catalog 603-A . . . or call in the nearest Clarage sales engineer.

CLARAGE FAN COMPANY
Kalamazoo, Mich.

You can Rely on...

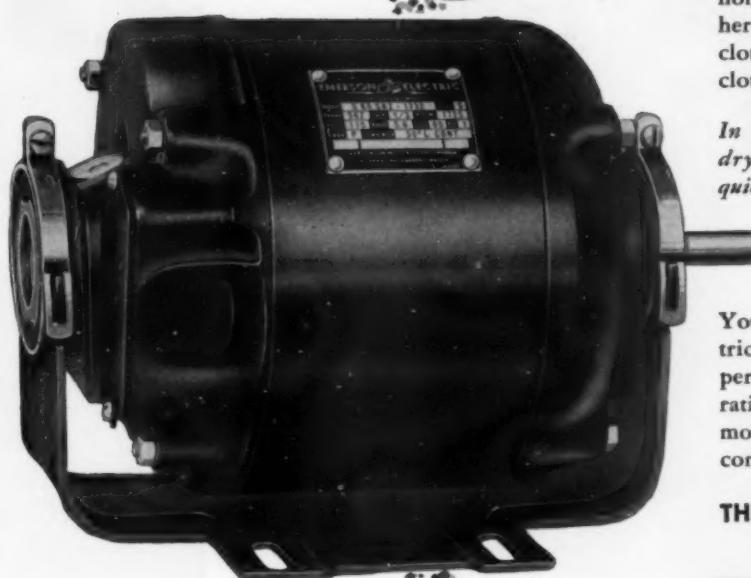
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Headquarters for
Air Handling and
Conditioning
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MUSIC to her ears!

A sweet note to the ears of the modern homemaker is the low, efficient hum of her automatic clothes dryer. Clothes lines, clothes pins and a damp basement full of clothes are no longer necessary.

In many of America's best known clothes dryers, an Emerson-Electric motor works quietly and efficiently.

You, too, can benefit from Emerson-Electric's 63 years of motor manufacturing experience. If you require standard motors in ratings from 1/20 to 5 h.p., or hermetic motors from 1/8 to 20 h.p., write for complete information.

THE EMERSON ELECTRIC MFG., CO.
St Louis 21, Mo.

EMERSON-ELECTRIC MOTORS For Belted Fans and Blowers



These motors incorporate all the electrical and mechanical specifications best suited for this service. Split-phase motors, available in 1/6, 1/4 and 1/3 h.p., with resilient mountings and automatic reset thermal protectors. For complete data write for Motor Bulletin No. 479.

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ELECTRIC
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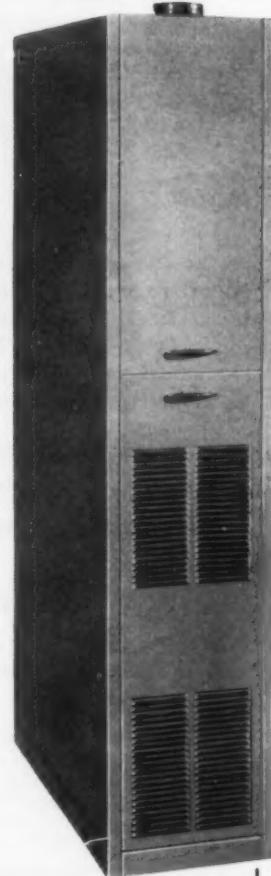
COZY'S got more in '54

more profits - more quality - more features
with these **new FORCED AIR FURNACES**

MODEL 200-75 UPFLOW

75,000 BTU/hr. input rating — requires only 14" x 28" floor space. Designed for installation in closet, alcove, utility room, or basement. Exclusive insulated air wall completely surrounds heat exchanger unit. Furnace cabinet wall is cool — allows "zero clearance" installation without fire hazard. Installs with conventional ducts. Especially approved for use with new 4" duct systems. Sturdily constructed. Cabinet of 22-gauge steel, finished in harmonizing graysmooth exterior.

ALSO MODELS 200-105 (105,000 BTU) and 200-140 (140,000 BTU)



MODEL 201-75 COUNTERFLOW

Based on a new heating concept, this Cozy model blankets the cold outside walls and windows with warm air, checking cold air entry. Approved for installation on combustible floors. Comes with special base. No built-up foundations needed. Same features and specifications as upflow Model 200-75.

ALSO MODELS: 201-105 (105,000 BTU) and 201-140 (140,000 BTU).

ASK YOUR DISTRIBUTOR OR WHOLESALER ABOUT OUR
SALES-PRODUCING "DATING" PLAN AND HIGH-PROFIT
"CONTRACTOR" SALES PLAN.



COZY

THE ADVANCE FURNACE COMPANY
WICHITA, KANSAS

check these outstanding features:

- Approved for "zero clearance" installation.
- Approved for use with 4" duct work.
- Approved for use with ALL types of gas. Same BTU rating on natural, mixed, manufactured, and LP gases.
- Available in either upflow or counterflow models.
- Factory wired, assembled and live-tested — ready to install.
- Accessible — entire Cozy unit may be serviced from front after installation.
- Ten-year guarantee on exclusive "Curvic" 16-gauge heat exchanger.
- Cozy fan flame burner — thin, blue, fan-shaped flame readily absorbs oxygen from all sides for complete combustion.
- Wide choice of automatic temperature controls. 100% safety pilot on all 24-volt controls.
- Competitively priced — highest quality allows you to outsell competition.

COZY WALL MODELS

Gives both circulated and radiated warmth for the finest combination in heating. Circulated air passes through the heater and into the room, while the heater front panel delivers gentle radiation warmth. A heavy corrugated heating unit ruggedly made and welded gas tight is designed for lifetime service. Cast iron slotted type burner produces the famous Cozy Fan Flame for maximum combustion efficiency. Fully insulated with two and three layers of live air insulation.



Plus the COZY CHALLENGER

NEWLY DESIGNED SLIDING
END PANEL MAKES CONTROLS
ACCESSIBLE FROM ABOVE . . .

The best buy in the floor furnace field. Its new design makes all controls accessible by removing grill and end panel. Sales-producing features are: Heavy-gauge steel heat exchanger—Heavy-duty, unbreakable steel grille—Shallow design outside casting—Removable inner jacket—Ten-year warranty—Complete range of sizes—AGA approved.



Engineered for **DEPENDABILITY**

Delco Motors

Careful dynamic balance is only one reason why Delco motors are preferred by many leading manufacturers of heating and ventilating equipment.

An impressive list of features contributes to Delco's enviable record for continuous, trouble-free performance. These features include uniflow pressure-cast rotor conductors, steel-backed tin babbitt sleeve bearings, cored oil wells, varnish-dipped and baked motor windings. Careful selection of materials, too, is a big factor in enabling Delco motors to give longer, more dependable service.

The motors you need for your products, in sizes from fractional to 100 h.p., are in the great Delco line. For information on motors for any application, address Delco Products, Dayton, Ohio, or our nearest sales office.



MOTORS FOR OIL BURNERS
Delco flange-mounted motors, split-phase— $\frac{1}{2}$ - to $\frac{1}{4}$ -horsepower ratings.

THE BEST RUNNING MATE YOUR PRODUCT CAN HAVE



MOTORS FOR BLOWERS
Delco resilient-mounted motors, split-phase and capacitor-start types, single- and two-speed designs— $\frac{1}{6}$ - to $\frac{1}{4}$ -horsepower ratings.



DELCO
PRODUCTS

Division of General Motors Corporation • Dayton, Ohio

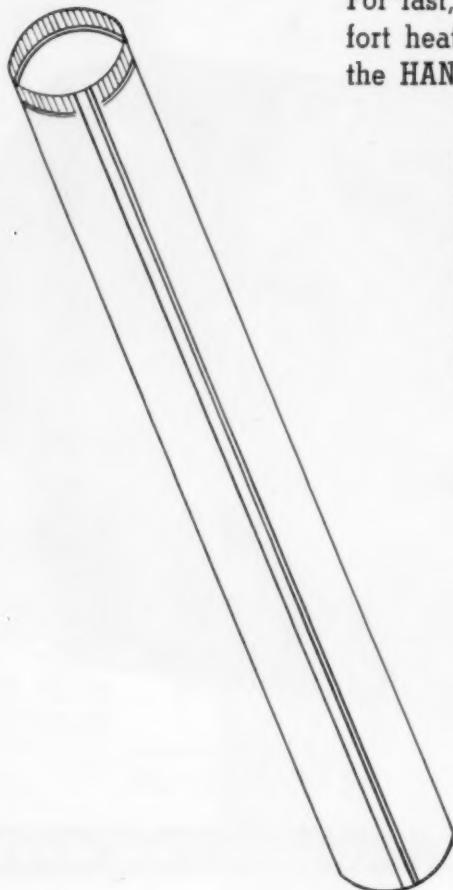
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It's Ready!

HANDY-LOCK

"Longfellow"



For fast, efficient, low-cost installation of warm-air comfort heating and cooling residential jobs we recommend the HANDY-LOCK "Longfellow".

"Longfellow" is a five-foot length of Handy-Lock pipe in 4", 5", 6", 7" and 8" diameters of 28-gauge galvanized steel. Each section is made with a continuous snaplock. No tools or seaming are necessary, and the lock, being continuous the entire length of the pipe provides a rigid "backbone". Shipped in cartons of 25 feet, "Longfellow" is ready for instant use.

HANDY-LOCK PIPE IS AVAILABLE ALSO

in two-foot lengths in 6" through 10" diameters in 30-gauge; 3" through 12" in 28-gauge and 6" through 12" in 26- and 24-gauge.

For all your needs for all types of residential warm-air comfort heating and cooling jobs, HANDY pipe provides a complete, standardized line of fittings, pipe and duct-work.



F. Meyer & Bro. Co.

"The Handy Pipe People" Peoria, Illinois

Announcing

WHEELING
SOFTMITE
TRADE MARK
GALVANIZED SHEETS

A new and revolutionary process*, incorporating the very latest manufacturing techniques developed and perfected by Wheeling engineers, now produces a new and different galvanized sheet known as "SofTite."

It is new and radically different, not merely because of its method of manufacture but because of its new and long-sought qualities and characteristics unachieved in the past by any other process.

The "SofTite" Galvanized Sheet is a signal achievement in sheet steel metallurgy after years of research and experiment—the combination of a soft, ductile steel base and an incomparable tight zinc coating.

Ductile and tight-coated to a most amazing degree, "SofTite" forms freely and easily without the customary distortion by strains in the zinc coating which cause separation of the coating from the base metal.

Commercial Quality and Drawing Quality in gauges No. 18 to 30, widths 24" to 36" and lengths 72" to 168", Wheeling "SofTite" Galvanized Sheets meet the complete range of sheet steel requirements for the fabricating industry. Users of "SofTite" Galvanized Sheets have acclaimed them the ultimate continuously coated galvanized sheets.

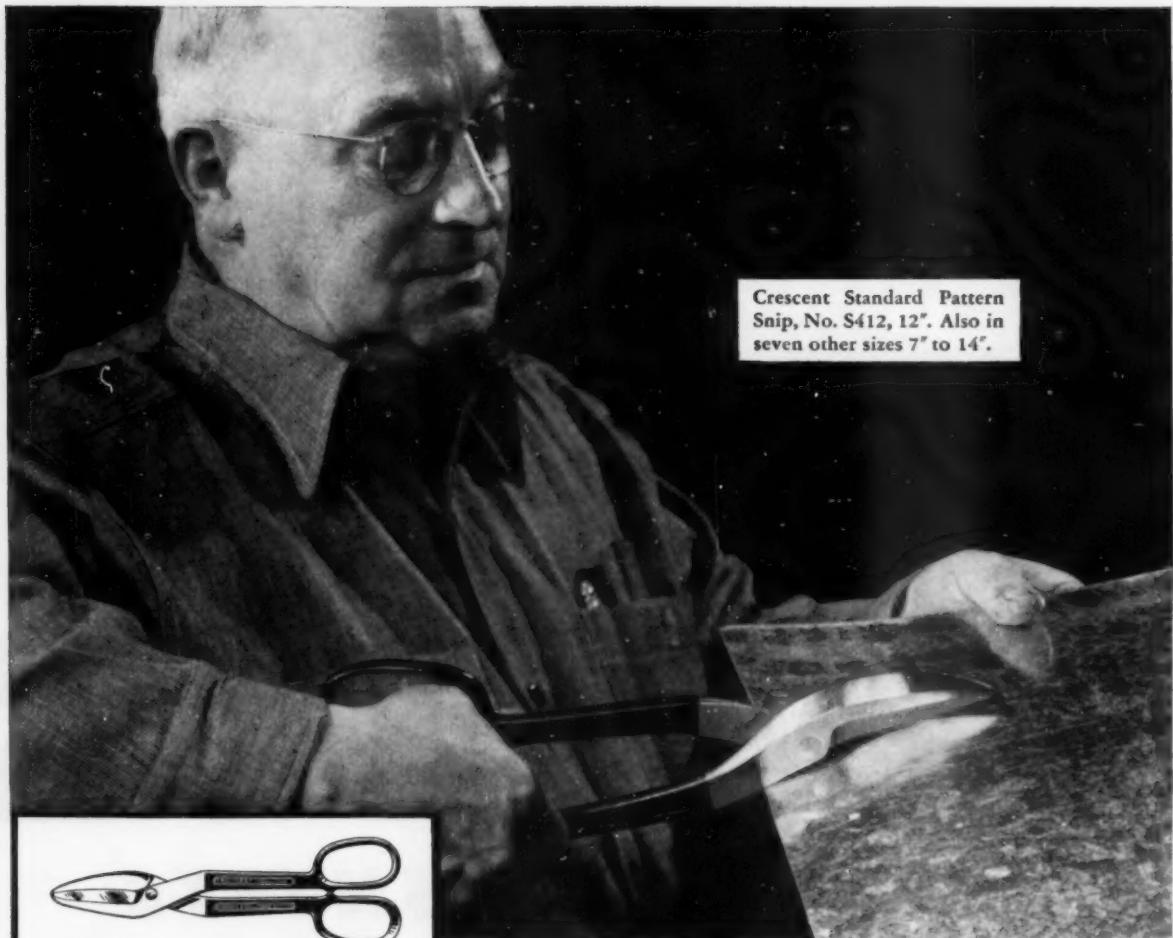
Working sample available. Call or write nearest warehouse.

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WHEELING CORRUGATING COMPANY
Wheeling, West Virginia

Atlanta Boston Buffalo Chicago Columbus Detroit Houston Kansas City
Louisville Minneapolis New Orleans New York Philadelphia Richmond St. Louis





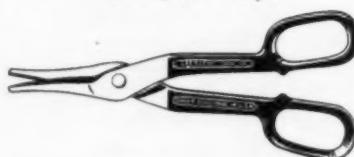
Crescent Standard Pattern
Snip, No. S412, 12". Also in
seven other sizes 7" to 14".



COMBINATION PATTERN
U412, 12" only.



HEAVY DUTY SNIPS
U416, 16" only.



CIRCULAR CUTTING SNIPS
T412, 12". Also in 7" size.

CRESCE NT SNIPS

All Crescent Snips are forged of selected steel and blades ground on special grinding machines. They are hardened by Crescent's own selective induction process to insure long, satisfactory service. These easy-cutting, well-balanced snips are made in four patterns; standard, circular cutting, combination and heavy duty. *Sold by Industrial Distributors and Hardware Dealers everywhere.*

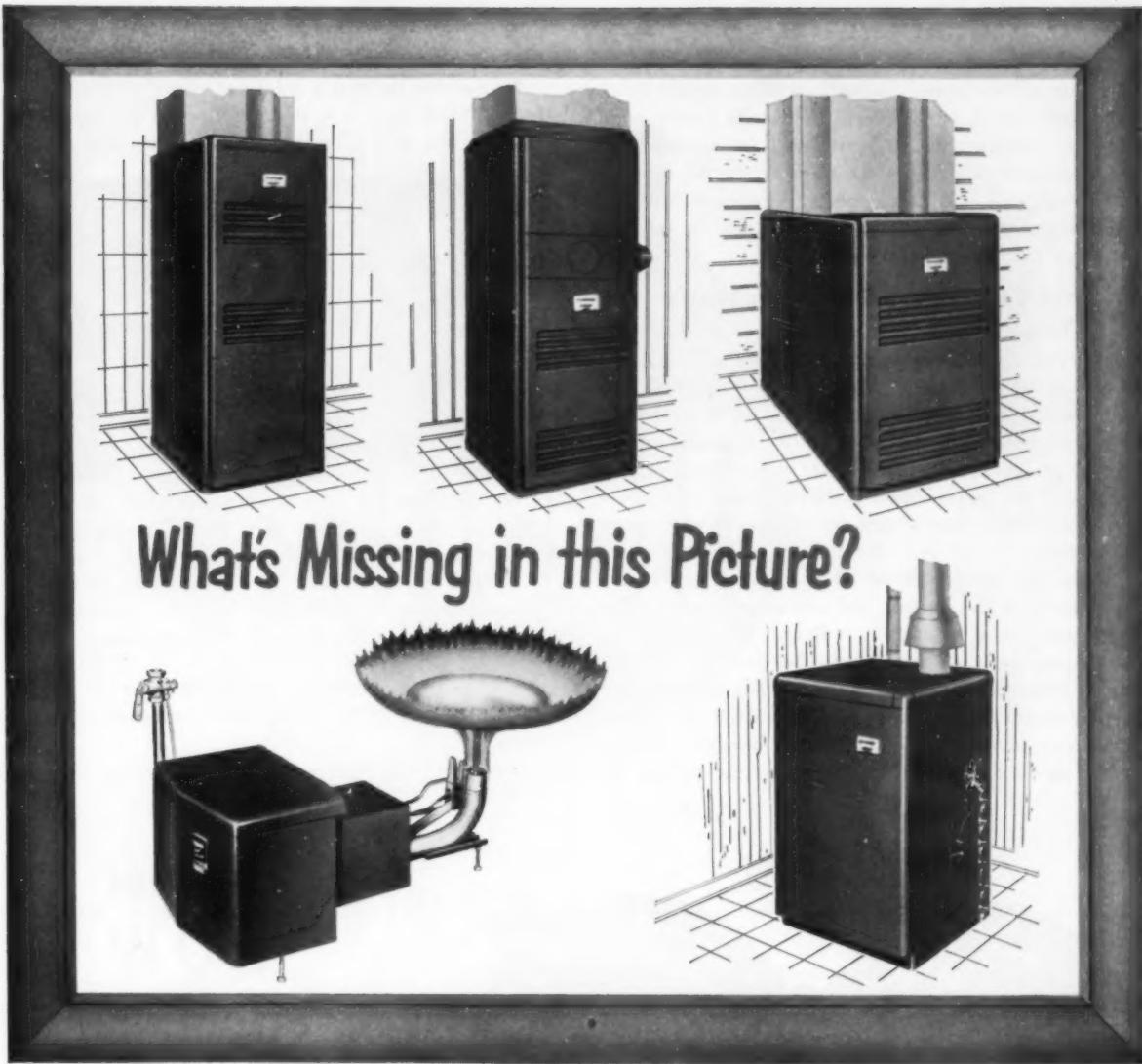
CRESCE NT TOOLS

Give Wings to Work

®

*Sign of the Artisan
Symbol of Excellence*

Crescent is our trade-mark, registered in the United States and abroad, for wrenches and other tools. Sold by leading distributors and retailers everywhere and made only by
CRESCE NT TOOL COMPANY, JAMESTOWN, NEW YORK



What's Missing in this Picture?

Answer: Absolutely nothing! Here is the greatest array of top-quality, gas-fired heating equipment any profit-minded dealer could ask for.

Hi-Furnaces, Lo-Furnaces, Counter-Flo Furnaces, Conversion Burners, Cast-Iron and Copper Coil Boilers. All engineered and manufactured, to meet every customer requirement. All competitively priced—all newly styled—to give Timken Silent Automatic Dealers sales advantages by the score!

Specially designed burner, for efficient wall placement of flame. Simultaneous, quiet burner ignition. 12-gauge, heat exchanger with "dimpled" design to eliminate internal baffles. Curved, solidly-welded

diffusers for efficient, quiet, heat transfer. Easily removable burner assembly for quick servicing. Electronically seam-welded, pressure-tested heat exchanger for clean, leak-proof operation. Metal cabinet interliner to insulate against heat loss, add to sturdiness. True, Timken Silent Automatic quality!

Write Today Get all the facts
on a Timken Silent Automatic Dealership. Address R. M. Marberry,
Timken Silent Automatic Division, Jackson, Michigan.



WHAT ASSOCIATIONS ARE DOING —

(Continued from page 135)

barbecue, a floor show, a hillbilly costume square dance and a ballroom dance which will follow the Friday night banquet. Daytime entertainment will be provided for the wives and children of the members in the form of swimming, golf and other sports. The combined contractors and suppliers groups are considering sponsoring a golf tournament for the men.

St. Paul Contractors Discuss Publicity

EVERY TUESDAY, members of the Roofing and Sheet Metal Contractors Association of St. Paul gather at a luncheon to discuss the problems of their industry and to find suitable answers that will make the operation of their business more effective. On February 9, the main subject was the problem of obtaining better recognition from the public for the services that the sheet metal contractors and warm air heating dealers are capable of performing for them.

Clyde M. Barnes, editor of the American Artisan, was a guest at the meeting and was asked to give a few suggestions on this subject. Basing his remarks on the recent experiences of several other local associations, he recommended that the public relations committee prepare a detailed program utilizing a series of pictures with accompanying explanatory text to describe a variety of the services provided by contractors throughout the

area served by the association. This material would then be sent to all local newspapers.

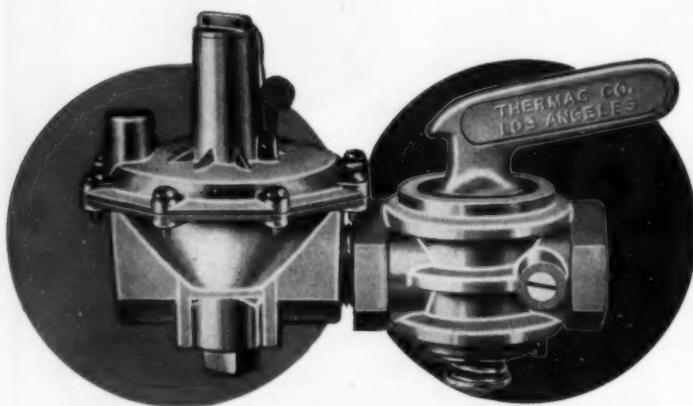
He pointed out that a good way to secure recognition for the work done is to tie news releases in with the insignia of the association so that it becomes a symbol for



OFFICERS OF THE Roofing and Sheet Metal Contractors Association of St. Paul discussing the program for their weekly meeting are (l. to r.) R. J. Grant, manager; Robert McPhillips, secretary; John Gill, president; David D. Diamond, vice president; and Harry F. Wahl, treasurer

quality work. Advertisements can then be run periodically to connect the association's members with this symbol.

Also given at the meeting were committee chairmen



APPLIANCE REGULATOR

Here's the famous Thermac "T" Series Regulator used on millions of gas appliances. Use it now in conjunction with the THERMAC Main Gas Shut-Off Valve.

- 1 Lower cost per BTU capacity
- 2 Greater BTU capacity per size
- 3 Small octangle body easy to install
- 4 Greater diaphragm sealing area prevents leaks

Certified by A.G.A.

GAS SHUT-OFF VALVE

Costs considerably less yet it is 2 to 3 times stronger and greater in capacity than ordinary gas control valves. This new Thermac valve, made of special high tensile aluminum alloy long proved in aircraft practice won't gall or stick. Valve rotor is treated with a hard facing and special long life lubricant. Pilot gas take-off may be provided on either side. Appliance manufacturers are invited to request samples and quantity prices.

Thermac
NOW
offers you
these
2
products

Use Thermac Regulators and Shut-Off Valves together for greater economy.

THERMAC
TM

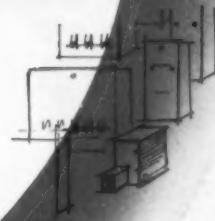
THERMAC COMPANY

800 East 108th St.

LOS ANGELES 59, CALIF.

You can rely on Rheem

**GAS-FIRED
WARM-AIR FURNACES . . .**
The most complete line of
central, space, floor, and
wall heating units!



— to do more for you —



You never lose a sale by not having the right model furnace when you sell Rheem. For customers who want the finest in gas-fired winter air conditioners and furnaces, Rheem offers a full range of sizes (from 25,000 BTU to 350,000 BTU input) in forced-air and gravity central heating units, floor and wall furnaces, and console heaters.

— and sell more customers too —



*Gas Saving
Heat Exchanger*

Flame-shaped to fit heat travel, the high efficiency Rheem heat exchanger is more completely wiped by hot gases. It helps provide greater transfer of heat to the air, and more uniformity of heating element temperature. This and many other special features help you sell more Rheem Furnaces, more money.

And every RHEEM Gas Furnace Is FIRE-TESTED!

Pilot is lit, burners are fired.
48-point test assures that controls,
safety checks work right, connections
are tight and safe! Furnace is
shipped to you completely
assembled and packaged.



RHEEM MANUFACTURING COMPANY

World's largest manufacturer of automatic storage water heaters

Sparrows Point 19, Maryland 4361 Firestone Blvd., South Gate, Calif.
7600 S. Kedzie Ave., Chicago 29, Ill. 800 Chesley Ave., Richmond, Calif.
1025 Lockwood Dr., Houston 20, Texas 3693 E. Marginal Way, Seattle, Wash.



**Now in
Convenient
Cartons
to save you
time and money!**

MUELLERAIRE

FURNACE PIPE, DUCT, AND FITTINGS

New Muelleraire packaged fittings cut your costs these five ways:

1. Eliminate damaged, out-of-shape fittings, and reduce corrosion.
2. Simplify handling — both to and from your warehouse or shop.
3. Reduce your warehousing costs — you need no special bins.
4. Simplify inventory and ordering — there's a stock record form printed on the face of every box.
5. Speeds shipping — no additional packaging is required.

Order Muelleraire Furnace Pipe, Duct, and Fittings from your wholesaler. Or, send coupon for catalog.

97a Mueller Climatrol

Tear out coupon and mail today!

L. J. MUELLER FURNACE CO.
2030X W. Oklahoma Ave., Milwaukee 15, Wis.

Send me catalog on Muelleraire
Furnace Pipe, Duct, and Fittings.

Name.....

Company.....

Address.....

City..... (.....) State.....



What Associations Are Doing . . .

(Continued)

reports covering steel roof decking, apprentice training programs, trade relations and heating codes.

New president of the St. Paul group is John F. Gill. Other officers elected at the association's recent annual meeting are David D. Diamond, vice president; Robert O. McPhillips, secretary; and Harry F. Wahl, treasurer. The directors (in addition to the above officers, all of whom are directors) are Joseph F. Bartl, Roy H. Dose, C. P. Neil, R. E. Walsh and C. E. Parriott.

The association has recently become the St. Paul chapter of the Sheet Metal Contractors' National Association, Inc.

Detroit Holds Heating, Cooling Series

TO HELP ITS MEMBERS meet the growing demand for air conditioning, the Detroit Warm Air Heating Association is conducting a series of meetings devoted to discussions of various aspects of combination heating and cooling. The first one was held February 11 at the Fort Shelby Hotel. Frank Drogosh, chief safety engineer, and Roy Burns, city inspector of Detroit, explained the City of Detroit requirements for air conditioning. Electric service requirements were detailed by Larry Van Tuil and Dick Carten of the Detroit Edison Co.

A recent bulletin from the association points out to its members that one of the best ways to reduce overhead is to "get more job while you are on the job." The bulletin points out that in a house where a gravity installation sells for about \$500, a forced warm air heating system would cost about \$800, while a complete air conditioning job would be about \$2000. Thus, for a job requiring not too much more time than an average heating installation, the dealer gets up to four times the volume of business.

Georgia Welcomes New Members

GUESTS AT THE JANUARY meeting of the Master Roofers Association of Atlanta were I. C. Mock, president, the Roofing and Sheet Metal Contractors Association of Georgia, and board members Marvin Kelly, Jr., and B. L. Noblitt. Following a discussion of union relations and sales tax problems, President Mock welcomed three Atlanta contractors — McDonald Sheet Metal Works, Lance Roofing Co. and Johnson Roofing Co. — into membership in the state association. The Atlanta group is cooperating with the state association in its current membership drive in the Atlanta area, those attending were informed.

The Roofing and Sheet Metal News, published by the state group, reports that a sales tax test case involving a Georgia sheet metal contractor is scheduled for early trial. It urges that all Georgia contractors support this litigation, and states that the association has agreed to act as an agency to receive contributions for the expenses involved.

Wherever there's a furnace or air conditioning unit of yours . . .
there's a filter of ours . . .



AMER-glas FILTERS

for furnaces and
air conditioning units

Yes, AMER-glas is a superior filter, ideal for today's improved furnaces and air conditioning units. As a result, all standard sizes are available in each of the 48 states . . . wherever a filter is needed for replacement.

As for specially designed filters to meet specific requirements, we have a staff of filter experts available to work with you at any time.

For 30 years—ever since the Manassa Mauler belted Luis Firpo out of the ring in the second round—AAF has devoted itself exclusively to air filtering problems. As a result, AAF is today the acknowledged leader in air cleaning equipment. Why not put all of that "know-how" to work by writing today for complete information on AMER-glas Filters.



American Air Filter COMPANY, INC.

355 Central Avenue, Louisville 8, Ky.



**OHIO
VALLEY
STANDARDIZED
PIPE and FITTINGS
SAVE MONEY
BY SAVING TIME**

CARRIED IN STOCK BY LEADING
WHOLESALEERS

Write for our Catalog.

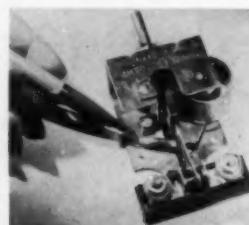


Ohio Valley Hardware & Roofing Company
METAL MANUFACTURING DIVISION, EVANSTON, ILL.

EQUIPMENT DEVELOPMENTS —

(Continued from page 139)

radio and television reception, according to the manufacturer. The unit is available with a single pole, single throw, or a single pole, double throw switch.



Above: Gas Regulator
Left: Thermostat

Gas Pressure Regulator

MODEL RV-41 gas pressure regulator designed for normal operation with a vent breather hole, designed to pass less than 1 cu ft per hr in case of diaphragm failure — Maxitrol Co., 12200 Beech Rd., Detroit 28. It has excellent lockup and pilot flow regulation characteristics, the company states. There is a non-metallic resilient valve seat and all parts are accessible when the top cover is removed. Applications include floor furnaces, low capacity central heating furnaces, wall heaters, etc.

Door for Homes with Central Heating, Cooling

New 1 3/8 in. steel flush interior door with integral grille, developed for use in centrally air conditioned and perimeter heated homes — Building Products Div., The American Welding & Mfg. Co., Warren, Ohio.

It is designed to permit closed-door privacy while allowing the proper air flow between connecting rooms and without impairing or disturbing the heat balance of the system. The door eliminates the need for return air ducts in certain rooms, the company states. It is available in a variety of sizes, with effective grille areas of 89, 113 and 136 sq in.

Direct Reading Area, Volume Calculator

DIRECT READING calculator providing data on areas and volumes, designed as an aid to those concerned with calculations for heating, air conditioning, etc. — Paul S. Morton Engineering Service, 609 Bangor Rd., Lawrence, Mich. It gives areas to the nearest sq ft and volumes in cu ft.

When the length of the wall is set at a certain point, the area in sq ft is read under the heading width or height. Window areas — either by opening size or glass size — can be found by means of the sliding sleeve on the device.

Method for Fastening Metal Sheets

"METALACING" method of "buttoning" metal sheets together, designed for rapid operation — Rotex Punch Co., Inc., 2350 Alvarado, San Leandro, Calif. (under

with ARMSTRONG . . .



THE CUSTOMER'S HAPPINESS COMES FIRST

Armstrong "Indoor Sunshine" furnaces and summer air conditioners do their jobs well — make householders happy. Happy customers are satisfied customers, and satisfied customers mean more sales.



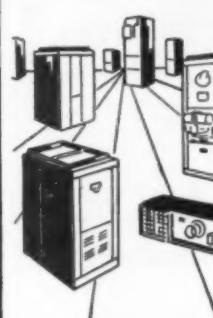
INSTALLATION IS EASIER...FASTER

Designed to install easily, whether to replace an old furnace or for a new house. Keeps dealer costs down. Many Armstrong units are completely assembled at the factory.



SMALL INVENTORY MEANS PROFIT

Armstrong distribution through wholesalers means little or no inventory for the dealer. Little or no money tied up.



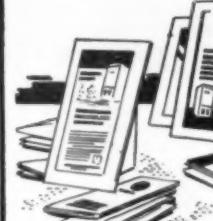
MORE THAN 50 UNITS...ONE FOR EVERY NEED

Selling Armstrong furnaces and summer air conditioners means selling a complete line. There's an Armstrong for every home, every situation. Every one is extremely attractive. Finished in two-tone blue enamel, baked on.



MAKING FINE PRODUCTS IS A TRADITION

Manufactured in modern plants, manned by capable workmen, Armstrong furnaces and air conditioners are examples of fine workmanship and high quality. Priced competitively, too.



NATIONAL ADVERTISING AND DEALER AIDS BACK UP THE PRODUCT

Continuing national advertising helps make sales. This year, Armstrong ads will be seen in *Better Homes & Gardens*, *The American Home*, *Small Homes Guide*, *Home Modernizing* and *Practical Builder*. Retail merchandising helps, too — a complete selection.



Armstrong's two huge plants serve both sides of the continent quickly, economically. A warehousing distributor, with a complete Armstrong inventory, is within a stone's throw of everywhere. Wherever you are, Armstrong's distribution system is set up to serve you. It's better, quicker, more profitable . . . for you.

Please address Dept. AA at our plant nearest you.



COLUMBUS,
OHIO

DES MOINES,
IOWA

Warm-Air Furnaces—Gas, Oil, Coal—A Complete Line

...industry approved

A-LUM-O-AIRE

PERMANENT

FILTER



now available to MR. and MRS. homeowner!

A-LUM-O-AIRE is a permanent "dry" type air filter designed for top efficiency in all forced air heating, air conditioning and ventilation applications. It is of all-metal construction and is completely rustproof and fireproof. No oils or adhesives are required. Frames are of aluminized steel with welded corners for extra strength. Mat retainers are made from heavy-gauge expanded steel and plated after cutting to size.

The filter media of ALUMO Aluminum wool consists of continuous strands with no short fibers. In a 20x20x2 filter there is an area of over 59 square feet with millions of tiny barbs which effectively catch and hold the dust. When dirty, A-LUM-O-AIRE is easily cleaned by flushing with cold water. It is designed to last the life of an ordinary furnace. A-LUM-O-AIRE filters are available in all standard 1" and 2" sizes. Special sizes can be made to order. Copper wool filter media with copper-plated mat retainers are also available. A-LUM-O-AIRE filters can be loaded with the proper filter media to meet any specific requirement.

Wherever quality, performance and permanence is desired you'll find the installation of A-LUM-O-AIRE filters pay off in satisfaction and economical maintenance cost.

Manufacturers Agents, Sales Representatives and exclusive distributorship inquiries are invited. This is an opportunity to get in on the ground floor with a product they ask for today and will demand tomorrow. Sales and advertising helps to meet local requirements.

INQUIRIES
GIVEN
PROMPT
ATTENTION

METAL WOOL DIVISION OF
CAREY ELECTRONIC ENG. CO.
SPRINGFIELD, OHIO

equipment developments . . .

(Continued)

license from Crockatt Engineering Co., San Francisco). Special punches and dies are inserted in the regular punch press to convert it to metal fastening duty. First, the shearing action of the punch creates a double parallel incision in the sheets to be fastened. Metal between these incisions is rammed downward against the anvil of the die beneath the sheets and between the die's movable jaws. There the impact spreads the depressed metal sideways to form a permanent fastening wedge or button under the surface of the bottom sheet. No additional element (rivet, bolt, or staple) is needed. Applications include fastening of continuous steel hinges to steel cabinet doors, etc.



Metal Fastening Method



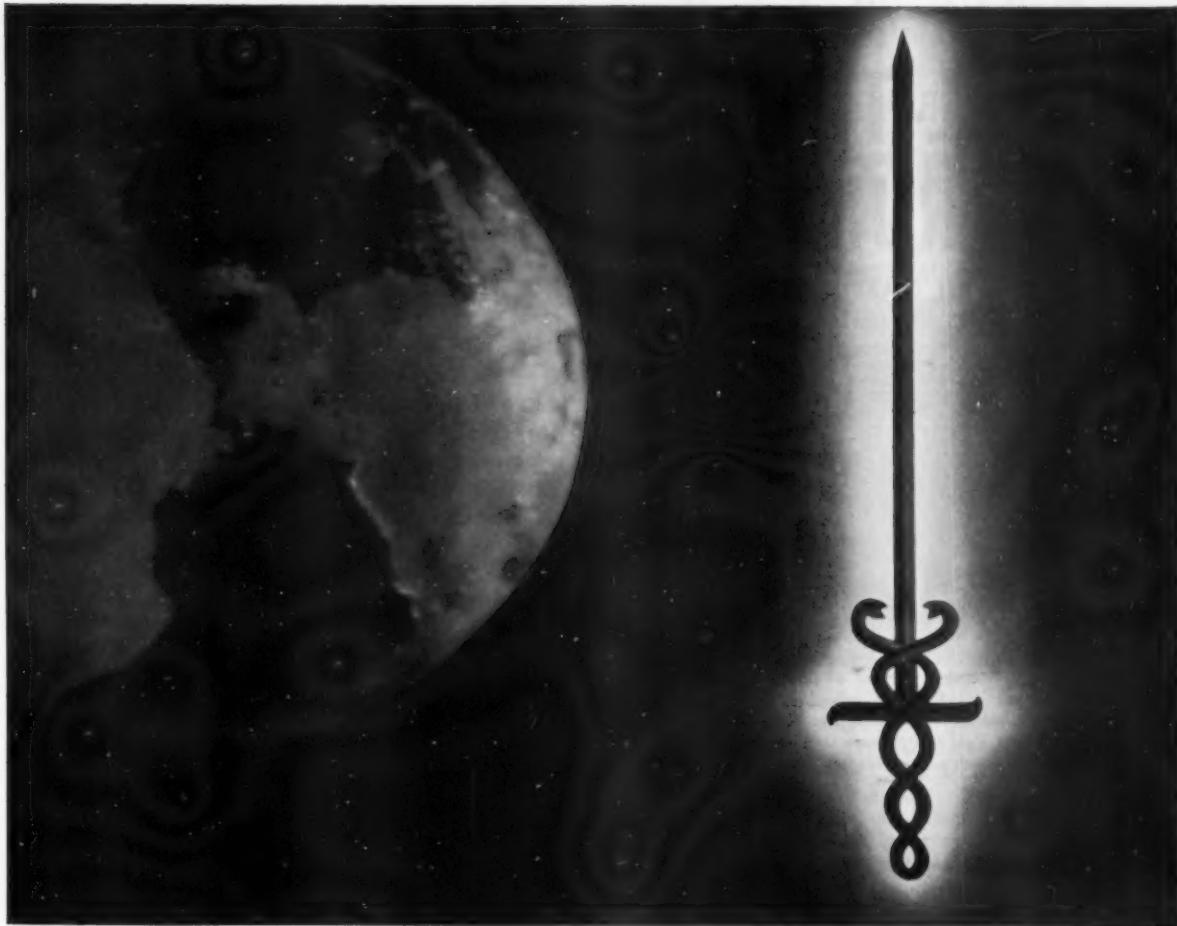
Cooling Unit

Sectionally Designed Central Cooling Units

NEW 2 AND 3 ton cooling units, sectionally designed so that they may be adapted for use with forced warm air furnaces, gravity type furnaces, or as a unit for offices and larger areas — Williamson Heater Co., 3500 Madison Rd., Cincinnati 9. The units occupy 2.7 sq ft of floor space. The basic cooling unit, used with a forced warm air furnace, is 21 3/4 in. wide, 18 in. deep and 44 in. high. A blower package is added on top of the basic unit (as shown) for use with gravity furnaces or where greater blower capacity is desired. A space cap is used to convert the cooler into a unit for larger applications. These cooling systems require only thermostat setting to operate. They cool and dehumidify.

Highboy Furnaces

MODEL G-804 gas fired and Model F-604 oil fired highboy furnaces designed for installation in basements, utility rooms or other close quarters — Perfection Stove Co., 7609 Platt Ave., Cleveland 4. The furnaces stand 59 7/16 in. high. Ratings are 99,000 Btu input for the gas model, 90,000 Btu output at bonnet for the oil fur-



Why the Sword of Hope is Mightier than Ever...

IN HIS AGELESS STRUGGLE on a cold and hostile planet, man's most faithful weapon—sometimes his only one—has been Hope; and it has never altogether failed him.

Even today, in the battle against one of our strongest and cruellest enemies—cancer—there are splendid indications that our hope and faith are not misguided; that the long winter of despair is no longer quite so cold nor quite so dark.

Already, cancer patients are being cured—completely cured—who, even five years ago, would have been beyond all help.

Tens of thousands are living happily this Springtime—and will live through many Springtimes yet to come—because they were *saved* last year from cancer.

Other tens of thousands *could* have been saved by today's knowledge, if only they had been treated *in time*.

Why weren't they treated in time? Because of all of us. We haven't worked hard enough at cancer education and service to patients. *And we still haven't given enough money* for training physicians, for clinics, and for research.

Yes, The Sword of Hope—symbol of the American Cancer Society's struggle against a mighty implacable enemy—is stronger and sharper than ever. If it isn't being wielded as powerfully as it might be, it's simply because more help is needed from *everyone*. Much more! Won't you please give *really generously*, this year?

American Cancer Society

Cancer
Man's cruellest
enemy
strike back

Give

GENTLEMEN:

Please send me free information on cancer.

Enclosed is my contribution of \$.....

to the cancer crusade.

Name.....

Address.....

City..... State.....

Simply address the envelope:
CANCER c/o Postmaster, Name of Your Town

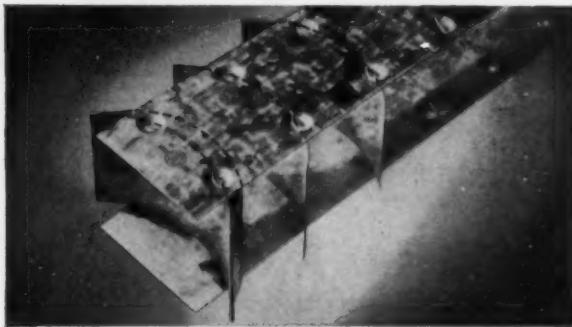
Absolutely without equal!

ALL-TITE

VANE RUNNER...

TRADE MARK

YOUR QUICKEST, CHEAPEST METHOD FOR
INSTALLING VANES IN SQUARE ELBOWS



Blades are cut raw from your scrap...double blades formed with flanges as shown above. For elbows more than three feet high, two or more units can be stacked. For additional length on vane runners, overlap two pieces.

"WE FIND it the simplest, fastest, most economical way of fabricating and installing turning vanes" . . . "Your runner has cut our cost of installing vanes by 50%" . . . "We've ordered and reordered for all types of jobs." Those are the things that sheet metal contractors are saying about the *All-Tite Vane Runner* — and orders are pouring in!

The new, improved *Elgen All-Tite Vane Runner* with its unique slotted knobs is made of 24-gauge galvanized steel, engineer-approved to accommodate either single or double blades. It eliminates punching, notching, riveting, spotwelding and layout . . . *requires no special chisels or tools*. Vanes are locked in a jiffy with shears or hammer. Assembled unit is quickly fitted in elbow, fastened with screws, and is completely rigid and rattleproof.

The *Elgen All-Tite Vane Runner* comes in 8-foot lengths, 20 strips per bundle. Order from your jobber for top efficiency and real savings . . . if necessary, ask us for your quickest source of supply. And write us for full information and engineering data.

Elgen Mfg. Corp., Dept. A-3, 41-34 39th St., Long Island City 4, New York.



A. F. of L.

ELGEN
ALL-TITE VANE RUNNERS

FASTESt...MORE PRACTICAL AND ECONOMICAL

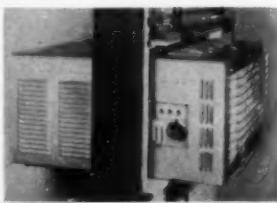
equipment developments . . .

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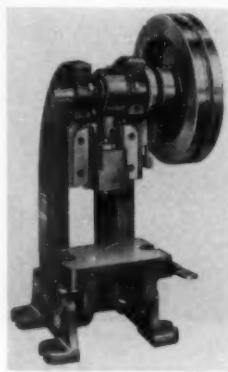
nace. Each has a direct drive blower. The gas model uses natural, manufactured, or LP gases; the oil furnace, No. 2 fuel oil.

Year 'Round Window Unit with Radiant Heating

"TWIN-FEATURES" window type air conditioning unit (which can also be wall mounted) which cools, ventilates, and provides heat through a 2 sq ft electro-thermal glass panel covering the unit's face — Electriglas Corp., Bergenfield, N. J. The panel is protected by a decorative grille and attains a maximum temperature of 440 F with a consumption of 1500 watts, the company states. The air conditioner utilizes a $\frac{3}{4}$ ton hermetically sealed compressor. Both conditioner and panel operate on 120 volt, 60 cycle a-c current and are controlled by a series of three switches and a thermostat mounted on one side of the unit. The unit is 26 in. wide, 15 in. high, and projects into the room $9\frac{1}{2}$ in.



Above: Window Conditioner



Right: Punch Press

Punch Press

NEW $1\frac{1}{2}$ TON small punch press for continuous, heavy duty work — Kenco Mfg. Co., 5211 Telegraph Rd., Los Angeles 22. Features include a solid crankshaft of a heat treated alloyed steel; a roller bearing-mounted flywheel; a self-contained clutching mechanism independent of the crankshaft; drive collar of alloyed steel; and ram and ram guides which are 90 deg V type. The standard stroke is $\frac{3}{4}$ in., 1 in. being optional. The press is open-backed and inclinable.

Gravity Furnace for Gas or Solid Fuel

GRAVITY FURNACE designed for "smokeless" operation, which uses either gas or solid fuels — Worsham & Associates, 110 W. Ocean Blvd., Long Beach 2, Calif. To switch from gas to solid fuels (or to burn dry trash) a grate is lowered to a horizontal position. If gas for heating is not available, a small burner unit can be installed and gas taken from the gas cooking line to take care of mild days. When solid fuel (wrapped blocks, loose, anthracite in various sizes, coke, briquettes, wood, etc.) is burned, it remains stationary and fire eats from right to left. No scooping of ashes is required, since they are

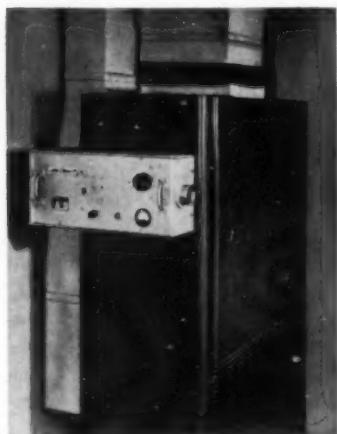
equipment developments . . .

(Continued)

deposited in a special receptacle on which a lid is placed when it is removed from the furnace. The rate of combustion is automatically controlled through a thermostat in the living room. When solid fuel is used, a baffle compels all volatiles to pass through the bed of coke to be burned, resulting in fuel savings, the company states. Moving a short lever once deposits ashes in the receptacle. The grate automatically returns to normal position.

Deodorizer Unit for Warm Air Systems

TYPE CV "Air Clear" ozone generator designed to deodorize air when used in conjunction with forced air heating or cooling systems—General Ozone Corp., 855 W. Washington Blvd., Chicago 80. The generator mounts on the sidewall of a conditioning unit or on the suction side of an air duct where ozone can be introduced directly into the air stream. It has no moving parts, requires virtually no maintenance other than periodic cleaning, and the only cost of operation is low wattage electric current, the company states.



Dust Collector



Above: Dust Collector

Left: Deodorizer Unit

Gas Conversion Burner

"AMERJET" DUST COLLECTOR, a reverse jet fabric collector designed for industrial ventilating systems where particles from the exhaust air are to be reclaimed due to the value of the air contaminant — American Air Filter Co., Inc., 355 Central Ave., Louisville 8. The cleaning medium is automatically reconditioned by a jet of high pressure air forced through the cloth in a direction opposite that of the air being cleaned. Because the cleaning cycle is continuous, the collector maintains a constant pressure drop and a steady air volume at the exhaust points, the company states.

Gas Conversion Burner

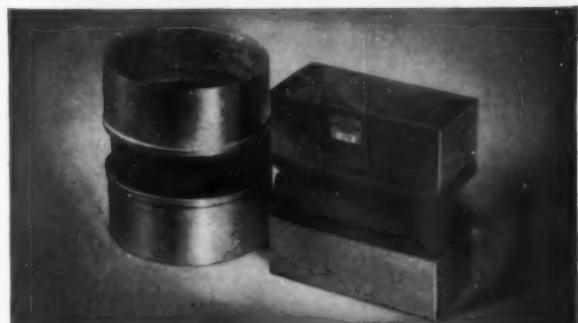
UPSHOT TUBULAR steel gas conversion burner with chassis of 16 gage steel — The Adams Mfg. Co., 1530 St. Clair Ave., Cleveland 14. The venturi tube is equipped with a new vertical stabilizer designed to insure against burn-

NOW... save time and slash costs
with the new

SILENT DUCT

TRADE MARK

METAL AND MATERIAL ALL IN ONE UNIT



HERE'S THE FIRST really important improvement that's come to you in years... *Elgen Silent Duct*, the modern flexible duct connection that abolishes vibration noise in furnaces, blowers, air conditioners and attic fans. Factory-assembled into a single rugged unit, *Silent Duct* does away with the old-fashioned time-wasting need for attaching woven fabric to metal in your own shop... saves you up to 60% of the cost of fabricating flexible connections!

Elgen Silent Duct is delivered in 100-foot (approx.) coils in a handy dispenser and *pulls out flat*, ready to use. It is made of 24-gauge galvanized steel fastened to long-life canvas* with top resistance to fire, water and mildew... and it's also available with heavy, top quality, non-porous asbestos.

Order *Silent Duct* from your jobber and start saving time and money that really count... if necessary, ask us for your quickest source of supply. And write us for literature that tells the whole story. Elgen Manufacturing Corp., Dept. A-3, 41-34 39th St., Long Island City 4, New York.

*Made under Govt. Spec. MIL-D-10860



PAT. PEND.
UNION
MADE

HOW TO FABRICATE SILENT DUCT

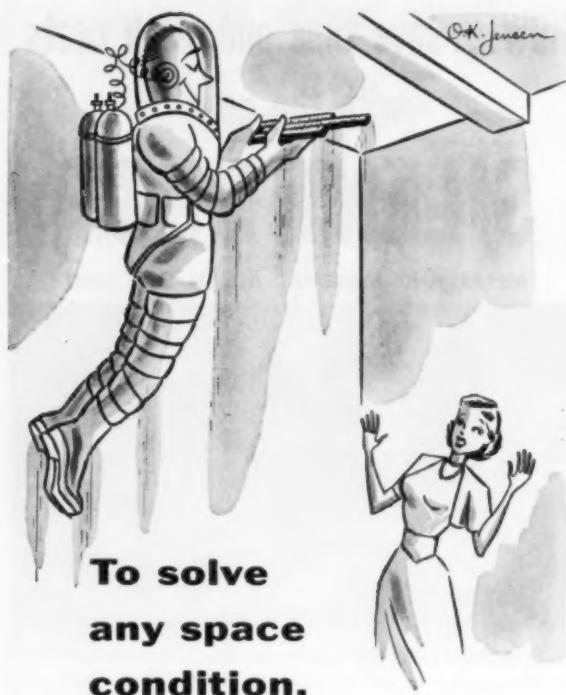
1. Stand dispenser against bench.
2. Pull out required amount of Silent Duct.
3. Cut with shears.
4. Bend as required.
5. Seam by any desired method.

A. F. of L.



ELGEN
SILENT DUCT

SAVES MAKING YOUR OWN FLEXIBLE CONNECTIONS



**To solve
any space
condition,
specify**

AGITAIR

For correct air distribution to suit any space condition, AGITAIR square and rectangular diffusers have no equal. Custom-designed with built-in diffusing vanes, in a wide variety of louver patterns, they provide blows in 1, 2, 3 or 4 directions without use of blank-offs. AGITAIR diffusers need not be centrally located in the area to be served.

Advantages of AGITAIR'S exclusive air pattern control feature are greater design freedom for architects and engineers, certified 100% draftless air distribution from any ceiling or sidewall location, maximum economy in duct runs.

New 34-page Type R Catalog reveals how correct air distribution is simplified by AGITAIR. Contact your local AGITAIR representative, or write us direct for your free copy.

AIR DEVICES INC.
185 Madison Avenue, New York 16, N. Y.

AIR DIFFUSERS • FILTERS • EXHAUSTERS



equipment developments . . .

(Continued)

out of the combustion chamber due to accidental jarring. The burner is factory assembled in one package and is suitable for rapid, one-man installation, the company states. Burners are adjustable in length from 16 $\frac{5}{8}$ in. to 25 $\frac{3}{8}$ in., and in height from 11 to 16 in. All burners are AGA tested and certified and are available in all



standard sizes from $\frac{3}{4}$ to 11 $\frac{1}{4}$ in. controls. Minimum input rating is 70,000 Btu per hr, maximum is from 210,000 to 400,000 Btu per hr with natural or mixed gas; from 140,000 to 400,000 Btu per hr with manufactured gas. The new burners also are designed for use with LP and butane air gases.

Conditioners for Casement, Standard Windows

"WONDERAIR" DRAWER type room air conditioner small enough to fit casement windows and redesigned standard width window units — Servel, Inc., 119 Morton Ave., Evansville 20, Ind. The room cabinet of the drawer type unit is 14 $\frac{1}{2}$ in. wide and will fit 197 different types and sizes of casement windows, the company states. The unit may also be used with standard windows. The unit has no visible controls. For operation, the front is pulled out, drawer fashion, to one of three different positions which provide ventilation alone, cooling and ventilation, and maximum cooling. Grilles are pre-set at 35 deg angles and are at the upper and lower edges of the drawer. The conditioner is powered by an electric refrigerating unit and is housed outside the window in a steel cabinet. It is available in 1/3 and 1/2 hp models, with cooling capacities of 4100 and 5800 Btu per hr.

A "driftwood" panel has been used on the front of the company's 1954 standard width window unit. The rest of the cabinet is polystyrene plastic in blond or mahogany. The unit is available in $\frac{3}{4}$ and 1 hp models.

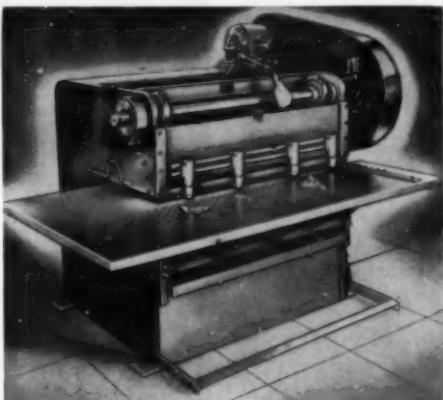
Squaring Shear

COUNTER THRUST, deep throat squaring shear designed for low cost, high speed production — The Manchester Machine Corp., Box 724, Manchester, Conn. The slide

equipment developments . . .

(Continued)

assembly is designed to counteract the rearward thrust caused by the cutting action. The shaft is mounted to the rear of the slide, producing a forward thrust behind the upper blade. Plungers are provided with micarta pads for firm gripping and to prevent marring. Deep throats are designed to permit use of the end of the



blade for notching to any desired angle with the same accuracy as on straight cuts. The 52 in. model has a 24 in. open throat depth; the 16 in. model, 7½ in. Standard speed is 120 blade strokes per minute, the company states. The safety clutch may be set so that one cut is made with each pressure on the treadle or cutting may be continuous. Blades have four cutting edges.

Air Conditioner-Furnace Combination

PACKAGE UNIT for central heating and cooling, which occupies 8.4 sq ft of floor space — A. O. Smith Corp., Box 584, Milwaukee 1. The packaged cooling unit incorporated will be manufactured for the company by Worthington Corp., New York. The combination unit will be available in either gas or oil fired models and with either 2 or 3 ton cooling capacities. The basic gas fired unit can be converted to any one of four combinations by the addition of two separate cooling packages of either 2 or 3 ton size along with the oil burner conversion package. The air conditioner slides into the base of the furnace cabinet and requires only a control circuit tie-in and a water line hookup for operation. It uses a water cooled condenser system. Burner inputs range from 100,000 Btu per hr maximum to a minimum of 40,000.

Hole Punching Units

TYPE JD hole punching units designed to punch mild steel up to 1/4 in. thick and to be used and re-used in unlimited setups — Wales-Strippit Corp., 345 Payne Ave., North Tonawanda, N.Y. Each punch assembly and die assembly is independent and self-contained. The former consists of the holder, punch, stripping spring, punch guide and pilot head. The latter consists of the holder, die and pilot pin. The units provide for punching holes at almost any center to center distance over



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Only AGITAIR square and rectangular air diffusers are custom-made to suit conditions of each application. The patented, built-in diffusing vanes are scientifically arranged in various louver patterns which provide blows in 1, 2, 3 or 4 directions without use of blank-offs. This feature eliminates the necessity of "oversizing" to compensate for blank-offs or baffles.

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DIMENSIONS — 20" wide, 24" deep, 36 1/4" high.

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FLUE — Requires 7" smoke pipe outlet. May be used with any chimney flue 6" or larger.

BURNER — Monoport, 18,000 BTU rating.

PILOT — Automatic, 1500 BTU rating, de-hydrates.

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Ask about **Majestic's**
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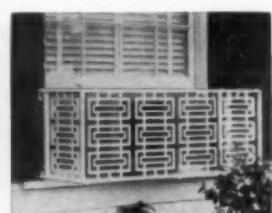
equipment developments . . .

(Continued)

both large and small sheets, the only limiting factor being the size of the die set or press, the company states. Units are available in two holder sizes for punching round or shaped holes up to 7/8 in. in diameter.



Window unit without . . .



and with grille

Ornamental Grille for Window Conditioners

"DECOR" ROOM air conditioner grilles in "Orleans" and "Modern" styles which are attached to wood, brick or masonry to beautify that portion of a window type air conditioner projecting outside the home — Bar-Brook Mfg. Co., Inc., 6135 Linwood Ave., Shreveport. The grille is of all-aluminum construction and is available in four sizes.

Heating and Cooling Units

NEW, COMPLETE line of residential heating and cooling units — Typhoon Air Conditioning Co., Inc., 794 Union St., Brooklyn 15. It includes six combination units and nine heat pump models. The standard unit will pass through a normal size door and take up less than 5 sq ft of floor area, the company states. Units are available for highboy or counterflow uses, and most models can be furnished for use with gas or oil. The air conditioning section can be equipped with either a hermetic or an open type compressor and the condenser can be either air or water cooled.

Grille Attachment for Wall Heater

GRILLE ATTACHMENT for heating a small room opposite the room in which the Model 358-2 gas fired wall heater is installed — Temco Inc., 4104 Park Ave., Nashville 9. Available as an optional feature, the 5 x 11 in. grille is intended to provide zone heating both upstairs and down. A control damper permits the owner to channel the amount of heat desired into the room which has the grille attachment. Individual thermostats on each wall heater permit regulation of the temperature in each area. The wall heater fits between the standard studding area of the walls, making it applicable for basementless homes and upstairs installation.

Diffusers for Evaporative Coolers

NEW SIZES in a line of ceiling installed diffusers for evaporative coolers — Ashburn Mfg. Co., 8468 Warner

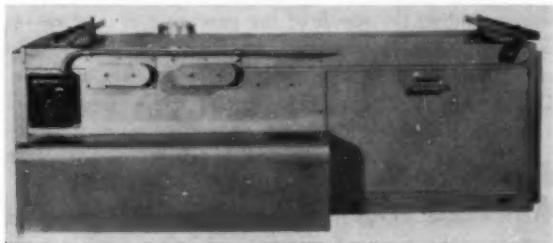
equipment developments . . .

(Continued)

Dr., Culver City, Calif. Four sizes are now offered, to fit all makes of coolers in sizes up to 12,500 cfm. These sizes accommodate round duct with maximum capacities of 14, 18, 22 and 30 in.; and square ducts with maximum capacities of 16 x 16, 18 x 18, 22 x 22 and 30 x 30 in. Louvers are reversible if "non-vision" appearance is desired. A sliding damper panel may be inserted during the winter to block off drafts.

Horizontal Gas Furnace

HORIZONTAL GAS FIRED forced warm air furnace designed for installation in attics, under floors, in regulation basements, utility rooms, etc. — Royal Jet, Inc., 1024 Westminster Ave., Alhambra, Calif. Designed for



compactness, it can be used singly or in multiple installations. Control assembly and flue outlets can be reversed in the field, and the unit is shipped completely assembled with controls. An adjustable speed, belt driven blower with overload protection is incorporated.

Window Type Air Conditioners

TWO NEW models in window type air conditioners, one featuring adjustable window mounting, the other for installation in casement windows — Philco Corp., Tioga and C Sts., Philadelphia 34. The models designed for flexible mounting can be installed to a flush mounting on the window sill line inside the room. The controls are grouped together on the front of the cabinet and the control panel is concealed by a drop cover. Controls are of the rotary type. Units incorporate the "Thermo-Cool" reverse cycle valve designed to permit the conditioner to heat the same size room on days when the temperature is as low as 32 F as it cools on warmer days. They also feature automatic temperature control and outside air intakes. The Model 184K "Consolette" unit (3/4 hp) can be installed in casement windows without requiring cutting of the window structure. It does not extend beyond the window line on the outside, and has a concealed control center on the top of the cabinet. Temperature control is automatic. Four sectional grilles are provided, and a 1 hp model has five grilles.

Motors for Summer Cooling

NEW LINE of two speed fractional horsepower motors for summer cooling applications — General Purpose Component Motor Dept., General Electric Co., Schenec-

Use quickdraft

THE DRAFT CREATOR
that makes all chimneys friendly

ON MODERNIZATION AND
NEW CONSTRUCTION

for bigger profits...
warmer friends

Now you can assure your customers against trouble with condensation on gas-fired heating plants—puffing, sooting and pulsating on oil burning equipment—smoking, puffing and clogging on coal furnaces—common difficulties caused by faulty or inadequate draft.

Short chimneys used in today's one-story and basementless homes do not provide sufficient draft to support full combustion and carry off all troublesome combustion products. Popular outside chimneys require longer to heat up and establish necessary draft. Long runs and ells in smoke pipes and angles in chimneys cut down draft.

quickdraft overcomes these faults immediately and effectively. It creates full draft when firing begins and drives combustion products up the chimney. It operates through the firing period but does not "build up" excessive draft. **quickdraft** places no obstructions in the smoke pipe.

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IMMEDIATE DELIVERY
all standard sizes



equipment developments . . .

(Continued)

tady 5. Designed for use on evaporative cooler, attic, air circulating and other fans, the motors are small, lightweight, have resilient bases, and can be mounted in any position, the company states. Speeds on all models are 1725/1140 rpm. Split phase models are rated at 1/6, 1/4, and 1/3 hp, 115 volts, 60 cycles. Capacitor start models are rated at 1/2 and 3/4 hp, 60 cycles, 115 or 230 volts. All motors are rated for 50 C temperature rise and are available with or without automatic reset thermal protection.

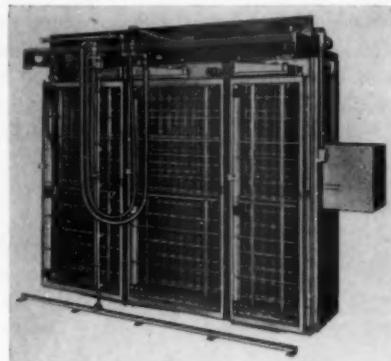
Vibration Isolators for Light Machinery

SERIES 262 AND 633 "Barrymount" vibration and noise isolators for use with motors or motor driven equipment applying static loads of 30 to 260 lb to each unit isolator — The Barry Corp., 888 Pleasant St., Watertown 72, Mass. Isolation of 60 to 85 per cent of structure-borne vibration is obtained at 1200 rpm, 95 per cent or more at 1800 rpm, the company states.

Automatic Washer for Electronic Precipitators

TYPE H WASHER designed to provide semi-automatic reconditioning of the collector plates in "Electro-Cell" electronic precipitators — American Air Filter Co., Inc.,

355 Central Ave., Louisville 8. It washes the plates with water sprays and recoats them with a dust holding adhesive. Operation is automatic after a starting button is pushed. The washer consists of a vertical header attached to a carriage that travels in an overhead track-

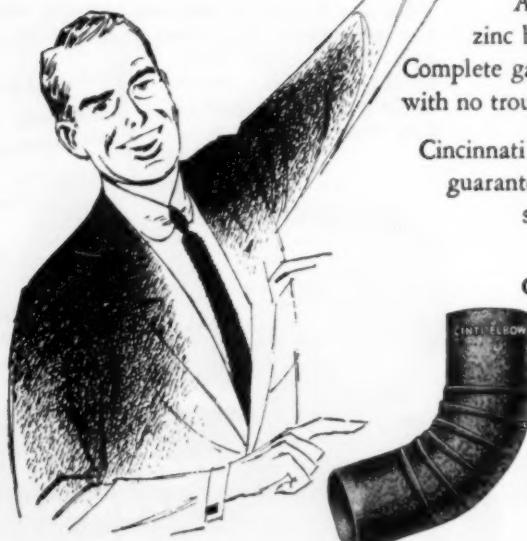


way extending the width of the precipitator. It moves across the precipitator twice on the washing cycle and after a five minute drying period, sprays on the adhesive. The washer is available for precipitators larger than 6 ft high and 6 ft wide.

Offset Fan Blade

"AIRISTOCRAT YO-20" 20 in. offset fan blade designed to reduce the required thickness of assembled air mov-

Actual tests prove Cincinnati Elbows last longer!



All Cincinnati Elbows are covered with protective zinc because the elbow is hot-dipped *after* formation. Complete galvanizing insures a rust-proof longer life elbow with no trouble-causing leakage.

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MODELS . . . 8 sizes—
25 to 200 thousand BTU

The PAC is just the furnace many small home owners have been waiting for. Don't miss this opportunity to cash in.

Used without ducts, the PAC is a deluxe unit heater which meets the most exacting demands for cleanliness, quietness, and fine appearance. But for most of your unit heater jobs, the standard Reznor line of suspended models will fill the bill perfectly.

Write today for more details—ask for Bulletin GNP-52 on the PAC or Catalog GN-53 on the complete line. **The Reznor Manufacturing Company, 53 Union Street, Mercer, Pa.**

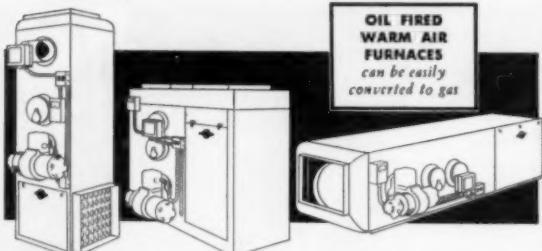
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**HORIZONTAL Summer
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Combining space-saving "horizontal" design with an entirely new cooling principle, Besser Summer Air Conditioners bring central air conditioning within the reach of almost everyone. Designed for installation and operation in conjunction with central heating systems, units are fully adaptable to either warm air or hot water heating. Greatly increased efficiency lowers initial and operating costs through use of smaller units.

Available in 2, 3 and 5-Ton units.

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Summer AIR CONDITIONERS
The Complete Line for Year-Round Profits

BESSER METAL PRODUCTS CORP., P. O. BOX 4064, CHARLOTTE, N. C.

equipment developments . . .

(Continued)

ing appliances by curling back around a motor — The Torrington Mfg. Co., 70 Franklin St., Torrington, Conn. It is especially adapted for use in compact models of direct drive window ventilators. The three blades, made of aluminum, have a steel spider and hub. The center dimension opening is 6 1/8 in. in diameter. The unit may be operated in either direction and is available in various pitches.

Exhauster and Pressure Blower

MODEL LV large volume exhauster and Model PB pressure blower — Chicago Blower Corp., 9867 Pacific Ave., Franklin Park, Ill. The exhauster is available in four sizes with volumes up to 2124 cfm and pressures to 1 1/2 in. static pressure. It has a forward curved wheel of all-welded construction. The pressure blower is available in volumes up to 335 cfm and pressures to 4 in. static



pressure. It utilizes a radial bladed wheel of aluminum alloy. Self aligning, grease lubricated ball bearing pillow blocks are furnished as standard for both models. The exhauster is designed for laboratory and other uses where moisture or corrosive gas may be present. The blower is for use in industrial process work to supply or exhaust air and can be specially coated or constructed of special metals to withstand corrosive or explosive atmospheres.

Induction Motor

"LIFE LINE-A" induction motor designed for longer life, greater flexibility and higher reliability as well as decreased size — Westinghouse Electric Corp., 401 Liberty Ave., Box 2278, Pittsburgh 30. It has improved ventilation, better insulation, a more efficient and better protected bearing, and is quieter and smaller per horsepower, conforming to the new NEMA standard dimensions, the company states. The motor is available in three enclosures: totally-enclosed fan cooled, totally-enclosed non-ventilated; and drip-proof.

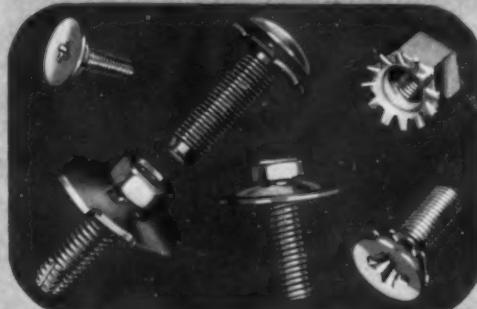
Gas Vent Pipe

MODEL WV gas vent pipe designed for in-the-wall venting — Metalbestos Div., William Wallace Co., Belmont, Calif. It has a narrow, oval cross section designed to permit easy installation inside a wall without extensive special construction or extra insulation, and features an

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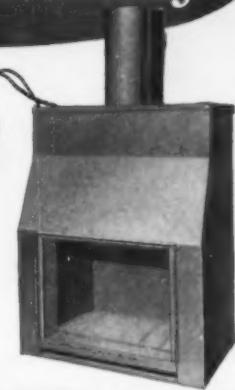
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**SOLD AND INSTALLED
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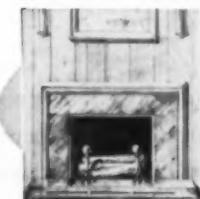
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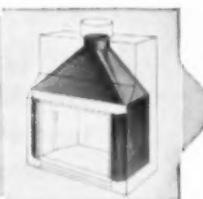
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(Mantel and facing material extra)
- Ample clearance to combustibles is built in
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You'll be amazed at the low cost of installing this fireplace and chimney unit in any home—small or large, old or new. This full 30" fireplace is far more economical than ordinary bricked-up types. It installs easily even on wood floors and needs *no clearance from combustibles* because the clearance is built in. Not just a fireplace form—not an auxiliary heater—the Majestic Thulman Fireplace is a completely self-contained, all-metal unit, easy to install, efficient in operation, durably built to last a housetime.



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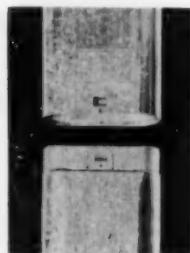
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(Continued)

inner and outer pipe separated by an insulating air space. A special coupler enables pipe sections to be joined without cement or mastic and without screws except where the vent will be left exposed in rooms or attics. The outer pipe is galvanized steel; the inner pipe, aluminum.



Above: Vent Pipe



Right: Cleaner

Suction Cleaner for Heating, Air Conditioning

MODEL AF SUCTION CLEANER designed especially for heating plant and air conditioning servicing — National Super Service Co., Inc., 1944 N. 13th St., Toledo 2. Featured is an inside "Supertex" filter designed to assure complete protection against damage and dirt result-

ing from filter bag blowouts. The unit is light in weight, intended to be carried easily and used in restricted places. It provides both wet and dry pickup.

Room Air Conditioners

EXPANDED LINE of room air conditioners, consisting of nine basic models of both console and window type units, and incorporating new engineering features — RCA Victor Div., Radio Corp. of America, Front and Cooper Sts., Camden, N.J. New features include permanent filters, night lights, built in thermostats, push button controls, and optional heating facilities. Window units are available in 1/3, 1/2, 3/4 and 1 hp sizes; console units, in 1 and 1 1/2 hp sizes.

Heating Units

REDESIGNED "JET-FLOW" and "Forced-Flow" heating units with new cabinet design, new snap-in grilles, lower cabinet temperature, and new color and installation features — Royal Jet, Inc., 1024 Westminster Ave., Alhambra, Calif. The grilles require no screws, only the inner grille frame requiring screwing into place. The units are designed for new or existing homes, multi-unit dwellings and small stores and offices and either wood or slab floor construction. They burn natural, manufactured or LP gas. Capacities are 25,000, 35,000, 45,000 and 55,000 Btu input, with the "Forced-Flow" line also available in a 70,000 Btu input size.

You can Fit Every Conductor Pipe

from plain round to corrugated square and of any angle from 10 through 90 degrees, with rust-resisting elbows that are guaranteed for quality and service by the

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Your jobber carries a complete stock of Dieckmann elbows and shoes, manufactured of all standard roofing metals and hot-dipped galvanized after formation.



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Reynolds Corporation installed non-flaking Ti-Co at Sanitary District of Chicago's West-Southwest Sewage Treatment Works, where resistance to rough atmospheric corrosion conditions is a must.



... says Clarence Wolfe,
superintendent of Reynolds
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SHEETS SAVE US SHOP-
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"One of our big problems is the way zinc coating on many galvanized sheets cracks or peels when we brake, roll-form or lock-seam them. The job has to be done over. We lose the shop-time and materials.

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galvanized by a patented, continuous process that eliminates the brittle iron-zinc layer which causes old-style hot-dipped galvanized to crack and peel. Yet **TI-CO costs no more!** Ask your dealer for Inland Ti-Co. Look for this stencil on all your galvanized sheets.

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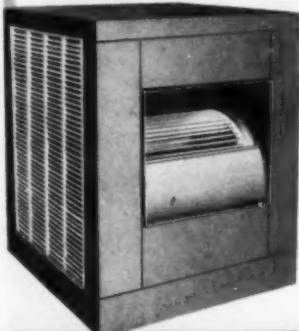
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Model No.	CFM	HP	Cu. Ft. of Space to be cooled
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70P	6800	3/4	3,500- 6,000
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Above motors 110-220 v. single phase (three-phase motors available on order)



CHILL-AIR MORE-VIEW

window coolers for home and offices are equipped with window adaptors and come ready for operation. No wiring or holes to cut. Just set in window, connect to waterline and plug into nearest outlet.

MORE-VIEW HOME AND OFFICE COOLERS

Model No.	CFM	HP	Speeds	H	W	D
32WP	3000	1/6	2	39	31	24
40WP	4000	1/3	1	39	33	28
42WP	4000	1/3	2	39	33	28

Above motors 110 v. single phase for plug-in to electric outlet

NATIONAL ENGINEERING & MFG. CO.
SEDALIA, MISSOURI

equipment developments . . .

(Continued)

Gas Fired Space and Wall Heaters

FIVE MODELS in 19 varying sizes in a complete new line of gas fired space and wall heaters — Bryant Heater Div., Affiliated Gas Equipment, Inc., 17825 St. Clair Ave., Cleveland 10. All five models (offered at low prices) are provided in units burning natural, mixed, manufactured or LP gases. A wide variety of control options and optional equipment is offered. The Model 402 dual faced wall heater is designed to heat two adjoining rooms; it is available with input ratings of 35,000 or 50,000 Btu per hr. Three single face wall heaters range in input from 17,000 to 35,000 Btu per hr. Also available in five sizes is the Model 430 gravity circulator with input ratings from 15,000 to 65,000 Btu per hr. The Model 431 fan circulator is rated at 30,000 or 50,000 Btu per hr, and the Model 432 radiant circulator, at 35,000, 50,000, or 65,000 Btu per hr. A new forced air heater, Model 433, is available in four sizes with input ratings ranging from 30,000 to 75,000 Btu per hr.

Twin Units for Year 'Round Conditioning

"WIN-SUM TWIN" units for summer and winter conditioning — Janitrol Div., Surface Combustion Corp., 400

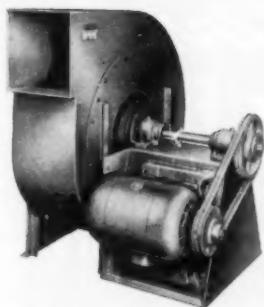
Dublin Ave., Columbus, Ohio. The winter conditioner features a "Dura-tube" heat exchanger which has "unlimited life expectancy," the company states. The summer conditioner is available in 2, 3, and 5 ton units and is designed for quiet operation. Both units take up the same amount of floor space. The heating can be installed separately, with the cooling unit added at a later date. Both use the same duct system. Automatic controls prevent both units from operating at the same time.

EQUIPMENT BRIEFS

AUTOMATIC GAS water heater with 11 gal capacity, designed for shops, cottages, offices, etc. — Bowen Water Heater Div., Handling Equipment Mfg. Corp., Wixom, Mich. It uses bottled or natural gas and incorporates a special electric ignition system designed to eliminate the need for a constant burning pilot light, effecting a gas saving. The unit can be installed inside or outside the building. With controls and venting system outside, gas or fumes cannot get inside, the company points out. The heater requires a space 19 in. wide, 18½ in. high and 22 in. deep.

"SWIF 50-50" paste type tin-lead solder designed to cut the time required for soldering and tinning operations — Hercules Chemical Co., Inc., 332 Canal St., New York 13. It cleans, tins and sweats in one operation.

CHOOSE A BETTER FAN TO DO THESE JOBS



Sturtevant Industrial Fans come in four standard arrangements for integral or separate motor drive, belted or direct-connected.

Catalog 1150 gives complete data on this fan and its 3 wheel types. Call your local Westinghouse-Sturtevant office, or use this coupon.

YOU CAN BE SURE...IF IT'S

Westinghouse

AIR HANDLING

J-80292



FOR EXHAUST AND CIRCULATION

Select the efficient Air Handling Wheel for smoke, fumes, gases or light dusts; for even circulating, heat treating, process and product cooling. Uses smaller motors.



FOR STRINGY MATERIALS

Select the Long Shavings wheel, especially designed for long, stringy, fibrous materials which must pass through the fan.



FOR MATERIAL HANDLING

Select the Material Handling Wheel, especially designed for exhausting grinding and buffing wheels; conveying granular materials, chips and sawdust.

Westinghouse Elec. Corp.
Sturtevant Division, Hyde Park, Boston 36, Mass.

Please send me Catalog 1150 on the Industrial Fan.

Name _____

Company _____

Title _____

Address _____

City _____ Zone _____ State _____

new literature . . .

Oil and Gas Furnaces

PACKAGED winter air conditioning units in models designed for crawl space, standard and low basement, or utility room installation are illustrated in an 8 page catalog insert — The Majestic Co., Inc., 733 Erie St., Huntington, Ind. Oil and gas burners are interchangeable. Also available is the company's 1954 price list for furnaces and accessories.

Pre-Finished Metals

BOOKLET describes and illustrates fabrication techniques and uses and properties of pre-finished metals — American Nickeloid Co., 1505 2nd St., Peru, Ill. Pre-plated finishes include chromium, nickel, brass and copper on the following base metals: steel, zinc, brass, copper, aluminum. Standard production techniques are illustrated, including soldering, riveting, blanking, drawing, etc. A table of properties and sizes provides reference data on the various types of metals offered.

Dust Collectors

BULLETIN No. 916 (4 pages) describes unit type "CN" cloth bag dust collectors for exhaust systems — Pangborn Corp., 560 Pangborn Blvd., Hagerstown, Md. The

bulletin describes how dust control for all types of finely divided dry dusts can be provided for smaller volume applications at low equipment and installation costs. Data such as weight, number of hoppers, cloth area, dimensions and diameter of inlets and outlets is given in chart form.

Duct Insulation for Air Conditioning Systems

HOW TO LINE and wrap residential air conditioning ducts is explained in an 8 page folder on duct insulation — Gustin-Bacon Mfg. Co., 210 W. 10th St., Kansas City, Mo. Subjects discussed include when and where ducts should be lined and wrapped, when vapor barriers are necessary, accepted methods of application, proper insulation thickness, etc.

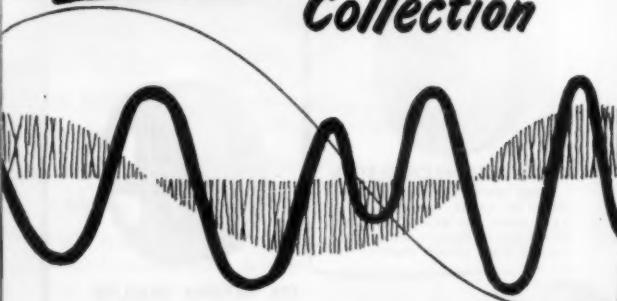
Air Conditioning Valves, Filters, Driers

CONDENSED catalog furnishes information on valves, filters and driers for air conditioning and refrigeration applications — A-P Controls Corp., 2450 N. 32nd St., Milwaukee 45. Product specifications, charts, and sales data are provided.

Vibration Isolators

BROCHURE describes Series LM-3 and LM-5 leveling "Barrymounts" designed to isolate machines from shock and vibration — Barry Corp., Dept. L&L, 1100 Pleasant

Effective Dust & Grease Collection



COSTS NO MORE... get this difference at NO EXTRA cost!

Airson Air Filters are viscous type, permanent and cleanable.
★Airson Grease Filters are permanent and cleanable.
Write for free bulletins!

Air Filter Corporation

108 A NORTH WATER ST. • MILWAUKEE, WIS.
Canadian Representative
DOUGLAS ENGINEERING CO., LTD., MONTREAL

A Few Distributorships Available. Write for Details!

"AIRSAN" REG. U.S. PAT. OFF.

new literature . . .

(Continued)

St., Watertown, Mass. The manufacturer states that installation and leveling can be accomplished quickly and easily without bolting or shims. Also available is bulletin 538 which presents detailed technical and application information on Series 670 and 297 shock and vibration isolators.

Stainless Steel Uses

USES OF STAINLESS STEEL in industry are described in a 36 page, illustrated booklet — Allegheny Ludlum Steel Corp., 2020 Oliver Bldg., Pittsburgh 22. A chapter on the technology of stainless steel includes a special chart which analyzes the types of stainless available on the basis of comparative properties. A discussion of fabrication includes information on welding, drawing, machining, spinning and other operations.

Heating and Cooling Ceilings

THREE-WAY functional ceilings which offer radiant panel heating and cooling as well as acoustical control are described in bulletin No. A-129 (12 pages) — Burgess-Manning Co., Architectural Products Div., 5970 Northwest Highway, Chicago 31. Heating and cooling are accomplished with the same coils. Heat is conducted from the coils through the aluminum ceiling panels.

which are secured directly to the coils. Heat energy is then radiated to or from the entire ceiling from or to surfaces or objects in the room.

Spot Welding Guns

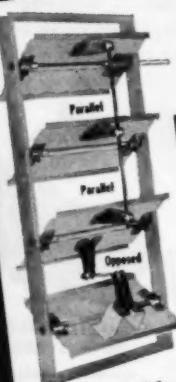
FOLDER illustrates and describes "Aircospot" gas-shielded spot welding guns which weld from one side only — Air Reduction Sales Co., 60 E. 42nd St., New York 17. Physical and electrical specifications and operating data are included. Features claimed for the unit include rapid operation, light weight, easy maintenance and rugged construction.

Aluminum Mill Products

BROCHURE PRESENTS technical information on aluminum mill products — Reynolds Metals Co., 2500 S. 3rd St., Desk PR, Louisville 1. Data on sheet and plate indicates which alloys, tempers, and sizes of flat and coiled sheet, circles and blanks are available as "mill standard." Another table indicates alloys, tempers, and sizes available as flat and coiled embossed sheet with the six standard embossed designs being pictured. A section on wire, rod and bar includes data on screw machine and forging stock, detailing in tabular form the alloys, tempers and sizes considered "mill standard." Rolled and extruded structural shapes are listed as to alloy, temper and size, including data on angles, channels, etc.

SAVE TIME, MONEY and MAINTAIN TOP QUALITY *DURO-DYNE* PRODUCTS

"DURO-BLADE KIT"
precision
engineered
DAMPER
HARDWARE

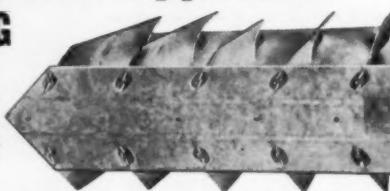


- Swiftest, simplest assembly
- Ideal for light or heavy dampers,
- Corrosion-resistant throughout
- Parallel or opposed blade action
- Can be screwed, bolted, riveted, welded, spot welded

3" blades or wider

"DURO-VANE RAIL" new, speedy, accurate way to make engineer-approved **AIR TURNING** **VANES**

Installed Cost
cut 50% to 70%



- Completed Turning Vanes meet engineering specifications
- Duro-Vane Rail lies flat in duct
- Eliminates layout
- Shipped bundles of 8 ft. rails, including special broad point chisel

WRITE for Free new "Visual" Manual

DURO-DYNE CORPORATION
Dept. B, 800 3rd Ave. • New Hyde Park, N. Y.

Quality Since 1871

TURNER

**NO. 475
LOW-PRESSURE**

**TINNER'S
FIRE POT**



Smokeless...sparkless...seetless! Complete with Turner's exclusive "Carburetor Control" for more perfect combustion; positive flame control for exact heat desired. Construction assembly permits quick, easy accessibility and cleaning. Burner coil is extra-heavy seamless steel tubing; pump is heavy blow-proof brass. Fuel capacity — one gallon. Get details, too, on the Turner Plumber's Fire Pot; Turner's complete line of Blow Torches; the new Turner line of LP Fire Pots and Torches. See your jobber...

THE TURNER BRASS WORKS
SYCAMORE, ILLINOIS
SINCE 1871

MAIL THIS COUPON!

Please send me full information on the profitable Glycolator sales plan.

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

**PROTECTED FRANCHISE
AREAS AVAILABLE!**



Proof positive that we can reduce air-borne bacteria and viruses to a safe sanitary level.

Add GLYCOLATOR*
AIR SANITATION

to new
and existing heating and air conditioning installations.

Every installation of this fast selling, low-cost Furnace Model GLYCOLATOR will add more dollars to your total sales along with desirable PLUS dollars of extra profit for your business operation.

The Furnace Model GLYCOLATOR was designed specifically for installation with existing or new warm air heating and air conditioning systems. The compact (10" high) Furnace Model is an electrically operated unit, easily attached to the side of the furnace or air conditioning unit and automatically vaporizes Glycosol. Thermosytatically controlled — it protects every room evenly, efficiently and inexpensively — treats homes with furnaces of up to 120,000 B.T.U.

There is a complete line of heating, air conditioning and portable model GLYCOLATORS available for every application.

*Registered



now ROBERTS-GORDON puts "The hot spreader flame kid" ON TELEVISION



...another reason why ROBERTS-GORDON

means greater consumer
recognition and acceptance

Roberts-Gordon, pioneer manufacturers of gas-heating equipment — including the exclusive patented Gordon Spreader-Flame burner and two thrifty, new firsts . . . a hot water heating boiler — the "GORDONEER", and the GORDON-AIRE Winter Air Conditioners . . . now gives you

TELEVISION ADVERTISING

in your own city, on your local television stations,
OVER YOUR OWN SIGNATURE !

WRITE OR PHONE
FOR THE DETAILS

NOW

... phone Buffalo
— HU. 8400 —

or send this coupon SPECIAL DELIVERY !



ROBERTS-GORDON . . . Buffalo 6, N. Y.

What are ALL the reasons Roberts-Gordon means greater sales for me?

NAME.....

ADDRESS.....

CITY.....

DEPT. AA

Revive Your Sales With Roberts-Gordon !

we hear that . . .



HOBART C. RAMSEY (right), president, Worthington Corp., welcomes H. P. Mueller, Sr., president, L. J. Mueller Furnace Co., into the Worthington organization

HAROLD P. MUELLER, president, L. J. Mueller Furnace Co., and Hobart C. Ramsey, president, Worthington Corp., have signed an agreement for the transfer of the net assets, name and good will of the Mueller company to the Worthington Corp., in exchange for Worthington common stock. Mr. Ramsey stated that the Mueller plant and facilities will be operated as the Mueller Climatrol Div. of the Worthington Corp., and that the present staff will continue in their positions.

THE ANNUAL sales meeting of the Tiffin Art Metal Co., held earlier this year, opened with a talk by Roy W. Weekes, manager of sales engineering, L. J. Mueller Furnace Co., who outlined his company's 1954 sales program for summer air conditioners. Mr. Weekes showed a slide film which will be used to explain the basic principles of cooling systems to wholesalers and dealers, and pointed out the need for dealer training in methods of estimating cooling requirements as well as heating requirements.

E. Rowden, Hart and Cooley Mfg. Co., introduced a new line of baseboard diffusers. The new registers will be available in 2, 4, and 8 ft lengths, and will include a 2 ft model with the same delivery capacity as the 8 ft, designed for use where baseboard area is not available for larger sizes.

L. F. Cooper, president, Buckeye Furnace Pipe Co., and Frank Davenport, manufacturers' representative for Buckeye in western Ohio, held an open forum on small pipe versus conventional systems. Mr. Cooper and Mr. Davenport pointed out that standardization of types and sizes of fittings would be of great benefit to manufacturers and wholesalers, and stressed the need for urging such action at the manufacturers' level through organizations such as the National Warm Air Heating and Air Conditioning Association.

L. L. Hock, Niagara Machine & Tool Works, discussed

WE PIONEER others try to follow... but **BRANDES*** LEADS THE PARADE!

Brandes Wall Base, for forced warm air heating systems is the first, and the finest! Experiments are over . . . it's proved performance at low cost! Write The Brandes Company, 2046 Winnebago Street, Madison 4, Wisconsin.

*PATENTED WALL BASE HEATING

with **BRANDES** WALL BASE

warm air blankets
the wall . . . radi-
ates along the floor!



AUTOMATIC DECOILING AND SHEARING BY *Dahlstrom*

Decoils • Flattens • Shears • Measures

Complete line consists of hydraulic expandable mandrel coil reel, roll straightener with all rolls power driven, hump table, high speed shear, conveyor type measuring and take off unit. All welded construction, anti-friction bearings, ground shafts and centralized control panel.

Gauge capacity 12 gauge and lighter.

Widths up to 60" — other widths also available.

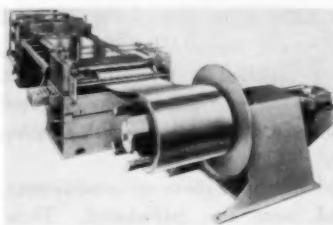
Cuts lengths to 20 feet or shorter.

Cutting tolerances of plus or minus 1/64".

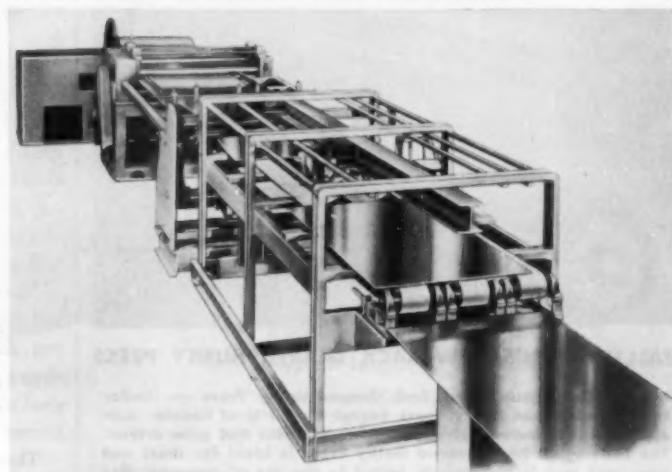
Simplified length adjustment.

Variable speed range 50 to 150 feet per minute.

Designed and built to suit your needs.



When writing for descriptive data, give complete details of your requirements.



Decoiling end view

Dahlstrom MACHINE WORKS INC.

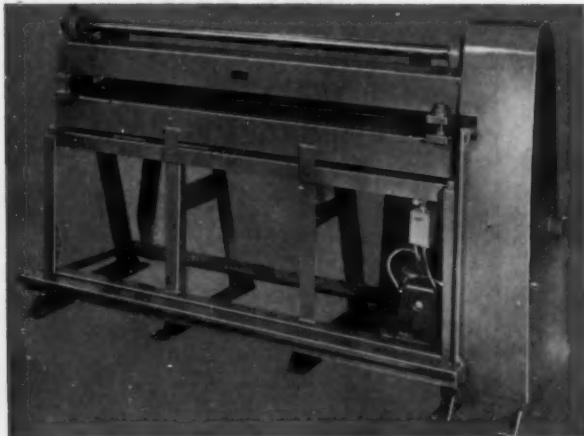
Roll forming machines, coil reels, roll straighteners, Flying cut-offs and decoiling roll feed lines.

4225 WEST BELMONT AVENUE—CHICAGO 41, ILL.—TELEPHONE SPRING 7-3670

FALLSINGTON

Sheet Metal Machinery

DESIGNED FOR THE PRACTICAL SHEET METAL MAN

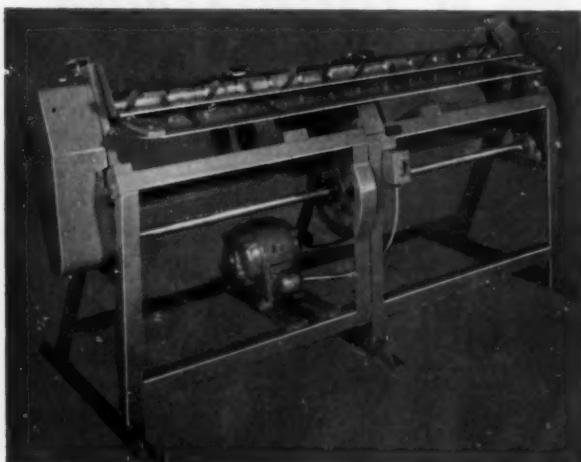


FALLSINGTON'S NEW 5' PIPE ROLLING MACHINE

The new Fallsington 5' Pipe Rolling Machine will roll pipe in one single operation without damage to the pipe or its locking device.

Pipes, 2' to 5' in length, 4" to 10" in diameter, of 30 to 26 gauge metal, can be rolled at the rate of 15 per minute.

This new time, labor and money-saver embodies the most modern aspects of machine tool building. It is easy to handle and occupies a minimum of floor space.



FALLSINGTON'S NEW BACK GEARED HUSKY PRESS

Here is Fallsington's new Back Geared Husky Press — similar to the Fallsington Husky Press except that it is of heavier construction and, instead of a belt drive, is chain and gear driven. The Fallsington Back Geared Husky Press is ideal for short and long runs and is particularly suited to the use of economy dies as used in the aircraft industry.

Literature will be sent on request to explain the operation of these two new Fallsington machines.

FALLSINGTON MANUFACTURING COMPANY

Manufacturers of Sheet Metal Machinery and Tools
FALLSINGTON PENNSYLVANIA

we hear that . . .

(Continued)

sheet metal shop practice and the use of machine tools, explaining that high labor rates were forcing contractors to rely more and more on both hand operated and power tools.

Guest speaker at the banquet on the second night was Fred Macke, Ferdinand Dieckmann Co., who discussed metal roofing and siding and the possibilities of increasing sales for applications in rural communities.



ATTENDING the recent national sales convention of the Home Heating and Cooling Dept., General Electric Co., were 75 distributors who have done business with the company for more than 15 years

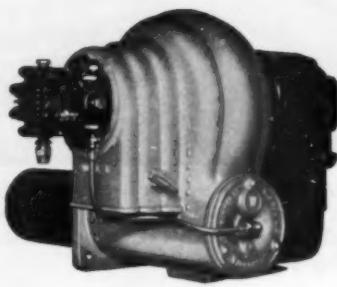
MORE THAN 300 distributors attended the national sales meeting held by the Home Heating and Cooling Dept., General Electric Co. to hear details of the company's new line of heating and cooling equipment. Speakers at the meeting included Ralph J. Cordiner, president of the company; Roy W. Johnson, executive vice president, Appliance and Electronics group; and F. J. Van Poppel, general manager, Air Conditioning Div.

NEW AIR CONDITIONING models that reflect a growing trend toward "packaged" equipment were introduced at a conference of Servel distributors held recently in Chicago's Edgewater Beach Hotel. "The trend in air conditioning this year," H. R. Nielsen, manager, Air Conditioning Div., told the conference, "is toward packaged merchandise in smaller tonnages. Factory assembled units will greatly reduce field installation costs."

Models displayed included three electrically operated self contained air conditioners, available in 3, 5, and 7½ ton sizes, which can be installed without ductwork in shops, offices, restaurants, etc., and a 2 ton gas operated cooling unit that can be used in connection with existing forced air gas furnaces.

Three new series of window type room air conditioners, all electrically operated, were also introduced. These include: 1) two casement type units which operate by pulling out the front to one of three different positions; 2) two reverse cycle conditioners for standard width windows, designed to provide both cooling and heating; and 3) a flush type model which can be installed almost

Wisconsin BURNERS



- A complete line — with Wisconsin Burners you can offer your customers a choice of 5 sizes — from $\frac{3}{4}$ G.P.H. to 18 G.P.H.
- Every Wisconsin Burner is factory tested under actual firing conditions.
- Wisconsin Burners have a reputation for quality that has made them a leader in the field.
- Available with the famous, efficient Shell Combustion Head.

FOR INFORMATION ON AVAILABLE TERRITORIES, WRITE

WISCONSIN OIL BURNER CO.

1134 REGENT STREET • MADISON, WISCONSIN



NEW DIFFERENT

PEXTO
NO - 24
SCRATCH AWL

Choose your favorite color from this Display Carton at your dealers. One dozen superior Scratch Awls in three eye-catching colors, four each red, blue and amber. $6\frac{1}{2}$ " overall length, $3\frac{1}{2}$ " blades, alloy steel, roll nickel plated, heat-treated, needle points.

TOUGH TENITE HANDLES — UNIQUE CONCAVE DESIGN (patent-applied-for) PREVENTS ROLLING

THE PECK, STOW & WILCOX CO. Since 1785 SOUTHBURY, CONN., U. S. A.

PPX54A

we hear that . . .

(Continued)

flush with the window, only 5 in. of the cabinet extending into the room.

In introducing these new room conditioners, Mr. Nielsen pointed out that there has been a tremendous growth in the sale of window units. "With the addition of these models," he said, "Servel can now provide a unit for every type of room and for every style of window."

THE EDDY STOKER CORP. has signed an agreement to act as exclusive distributor in the territory east of the Missouri River and from the Gulf of Mexico to the Canadian border for the Stokermatic Co., handling the sale of packaged automatic bituminous coal burning furnaces and space heaters. All components of the space heater are completely enclosed in the jacket.

THE AIR-CONDITIONING and Refrigeration Institute's conference on air conditioning and commercial refrigeration, held at Long Beach, Calif., on March 11, 12 and 13, was attended by several thousand visitors. Cooperating in the conference were four national associations — The Air-Conditioning and Refrigeration Institute, the Refrigeration Service Engineers Society, the Refrigeration Equipment Wholesalers Association and the Refrigeration and Air Conditioning Contractors Association. Ex-

hibits of over 60 leading manufacturers were on display at the municipal auditorium. Featured in the program was a talk by J. E. Blythe, Airtemp Div., Chrysler Corp., on room air conditioners for both cooling and heating.



PLANS for an accelerated program of sales and advertising during 1954 were discussed at the recent field men's meeting held by the Timken Silent Automatic Div., Rockwell Spring and Axle Co.

PRINCIPAL SPEAKER at the annual meeting of regional district sales managers of the Timken Silent Automatic Div., Rockwell Spring and Axle Co., was R. M. Marberry, national sales manager. Mr. Marberry outlined a number of special sales activities that will be conducted by the company this year to implement the theme, "More in '54."

*** FIRST LINE**

Extended-Surface

HEAT EXCHANGERS

ASK THE
AEROFIN MAN

Specify Aerofin and you specify high efficiency, long service life and low maintenance and service costs.

Take advantage of Aerofin's unequalled experience, production facilities, and materials-testing and design research — of Aerofin's complete engineering service at the plant and in the field.

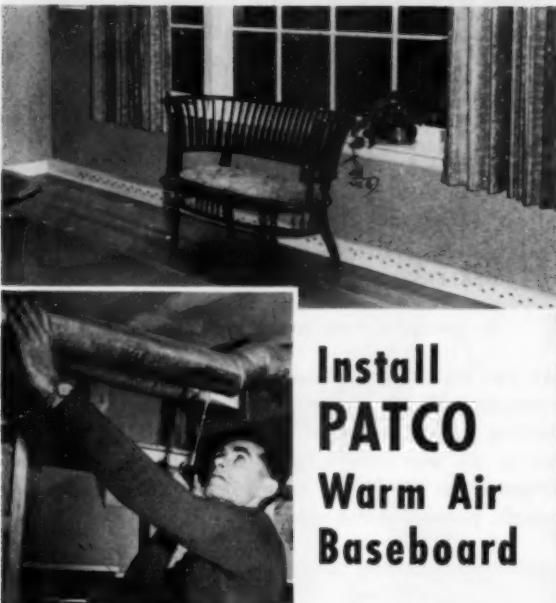
AEROFIN CORPORATION

410 South Geddes St., Syracuse 1, N. Y.

Aerofin makes extended heat surface exclusively — not as a by-product, not as a side-line. Sold only by manufacturers of fan-system apparatus. List on request.

GET MORE JOBS DONE

Make YOUR Customers Happier



Install PATCO Warm Air Baseboard

The newest type of home heating is warm air baseboard. The best is PATCO because it offers your customers so many advantages over other types. In addition, it saves you time, labor, permits you to get more jobs done because:

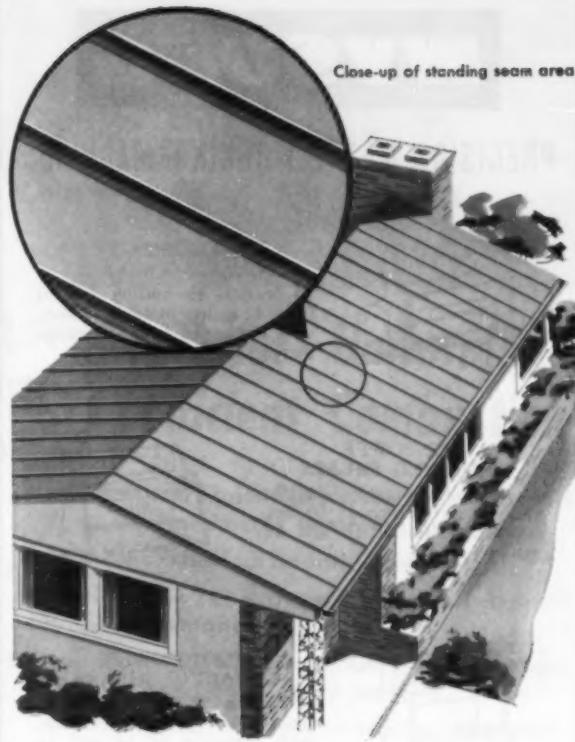
1. You just count the outlets, order the proper number of top and side take-offs, the correct amount of pipe. You don't have to make dampers or transformers, cut elbows, ducts.
2. There are no tapered ducts and many different size fittings to fuss with. A smaller extended plenum is used with 4" or 5" runs to each room.
3. The PATCO connector that is available simplifies connection between 4" or 5" round pipe and baseboard.
4. Low cost industrial downspouting in 10' lengths is used for 4" and 5" diameter pipe.
5. To install the baseboard itself, you simply nail it to studs, snap on the diffuser face.

Now you can see why contractors throughout the country tell us they can get more jobs done and increase their profits with PATCO Warm Air Baseboard.

See your jobber for details. Ask him or — or write us direct, Dept. A — for free copies of this new folder. It describes the advantages PATCO Warm Air Baseboard offers YOUR customers.



PATCO MANUFACTURING COMPANY
231 NORTH BREAD ST. PHILA. 6, PA. LOMBARD 3-2416



Close-up of standing seam area

You don't have to allow for expansion or cross joints with **Follansbee Seamless Terne Metal Roofing**

Quality metal roofing doesn't have to present any special problems in expansion-contraction allowances . . . not when you specify Follansbee Seamless Terne Metal. Expansion joints are unnecessary, for Terne has such a negligible coefficient of expansion.

Follansbee Seamless Terne can be cut to any length up to fifty feet, and installed without cross seams. The elimination of these unnecessary cross seams not only insures a more serviceable weatherproof roof, it cuts down on labor and installation costs as well, and there's a considerable saving of solder, too.

This durable metal roofing material offers many other advantages, as well. It provides strength without the comparable weight of other quality roofing. The coating won't flake off or peel. Terne has been service-proved over long periods on residential, industrial, and institutional installations. Check your A.I.A.-12-C-1 specification file, and if you don't have Terne Metal Roofing specification and installation details, Follansbee will be glad to send this information to you.

FOLLANSBEE STEEL CORPORATION

GENERAL OFFICES, PITTSBURGH 30, PA.

Polished Blue Sheets and Coils Seamless Terne Roll Roofing Cold Rolled Strip

Sales Offices—New York, Philadelphia, Rochester, Cleveland, Detroit, Fairfield, Conn., Milwaukee, Sales Agents—Chicago, Indianapolis, Kansas City, Nashville, Los Angeles, San Francisco, Seattle, Toronto and Montreal, Canada. Plants—Follansbee, W. Va.

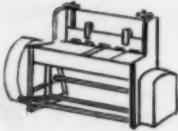
FOLLANSBEE METAL WAREHOUSES
Pittsburgh, Pa. Rochester, N.Y.

Fairfield, Conn.



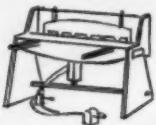
WYSONG

PRECISION METAL WORKING MACHINES



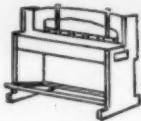
MOTORIZED SQUARING SHEARS

25 models in cutting lengths from 42 inches through 12 feet, with capacities from 16 gauge through $\frac{1}{4}$ inch.



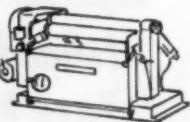
AIR POWER SQUARING SHEARS

6 models in cutting lengths from 36 inches through 10 feet, with capacities of 18 and 16 gauge.



FOOT POWER SQUARING SHEARS

6 models in cutting lengths from 36 inches through 10 feet, with capacities of 18 and 16 gauge.



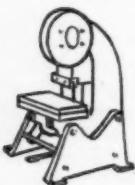
SLIP ROLL FORMERS

Hand operated and motorized bending rolls. Various sizes to fit your production needs.



ROTARY COMBINATION MACHINES

A single machine with attachments for crimping, burring, turning, wiring, bending, elbow edging, slitting, circle cutting, flanging.



O.B.I. PRESSES

Wysong Open Back, Inclinal Punch Presses are high production machines that are easy to operate and maintain.



See your dealer or write to the factory for full information on Wysong precision metal working machines.

WYSONG & MILES COMPANY

GREENSBORO, NORTH CAROLINA

Buy A Wysong . . . It's Miles Ahead

we hear that . . .

(Continued)



DEALERS and distributors for Royal Jet, Inc., toured the company's plant at Alhambra, Calif., at the conclusion of the annual sales meeting

AT THE RECENT annual sales meeting of Royal Jet, Inc., company officials demonstrated a ductless forced air heating system developed by its engineers and now in use on the west coast. Topics discussed at the meeting included the "5 P's of Profit"— product, production, people, promotion and potential.



PLANNING the fifth annual jobber meeting of the Armstrong Furnace Co. are Charles G. Brooks, district sales manager; John W. Norland, treasurer; Larry G. Hickok, executive vice president; H. C. Galleher, advertising manager; and John R. Swinehart, assistant sales manager

JOBBERS ATTENDING the Armstrong Furnace Co.'s fifth annual jobbers meeting, held recently in Columbus, Ohio, heard an optimistic forecast for 1954 sales. New products introduced included gas horizontal furnaces and summer air conditioners, details of which were explained by Herbert G. Hays, chief engineer, and George W. Zimbelman, sales manager of the Des Moines branch.

JOHN A. GILBREATH, former assistant vice president of Servel, Inc., has been named division manager of the Westinghouse Electric Corp.'s new Air Conditioning Div. This division, formerly a part of the Sturtevant Div., is now a separate operating unit, responsible for the development, manufacture and sales of air conditioning and refrigeration equipment. The Sturtevant Div. will continue to manufacture air handling equipment of all types. Headquarters of the new division will be Staunton, Va., site of a new plant scheduled for completion in June.



Oil Burner NOZZLES

**for Quiet - Uniform -
Efficient Combustion**

- Mirror Finish Tip causes heat deflection and minimizes gumming and coking.
- All nozzles individually flow-tested.
- Steinen Nozzles assure better all around burner performance.
- Sizes from .50 GPH to 35 GPH—both hollow cone and solid cone spray patterns.

Contact your jobber or write us for additional information

ESTABLISHED 1907



TRADE MARK

WM. STEINEN MFG. CO. 43 Broad St., Newark 5, N. J.

MANUFACTURERS OF ACCESSORIES FOR OIL HEATING AND AIR CONDITIONING



**PRICED *to sell* . . .
BUILT *to serve*!**

GAS FURNACES

UPFLOW and DOWNGLOW HI-BOYS . . .
BASEMENT MODELS . . . backed
by a strong 20 YEAR GUARANTEE

J. V. PATTEN COMPANY

SYCAMORE, ILLINOIS

Established 1900

Incorporated 1928

we hear that . . .

(Continued)



THE CARMICHAEL TIN SHOP will conduct heating, air conditioning and sheet metal operations from its new building in Montgomery, Ala.

THE CARMICHAEL Tin Shop formally opened its new building in Montgomery, Ala., on February 9. Several hundred people, including officials of the city, attended. A seven piece orchestra was featured and refreshments were served. The shop handles roofing, sheet metal, and air conditioning work. The building itself is heated and cooled with a Bryant "twin" unit handled by the company.

ATTENDING THE ANNUAL sales convention of the Duo-Therm Div., Motor Wheel Corp., were more than 400 sales representatives from the United States and Canada.

Features of the meeting included the introduction of new lines of automatic gas and oil water heaters and gas incinerators. Louis C. Vandertill, assistant sales manager, detailed the features of the incinerators and Edward Crary, assistant sales manager, described the water heaters.

AT THE RECENT National Association of Home Builders' show, Mueller Climatrol Div., Worthington Corp., displayed its complete 1954 product line, including furnaces, room air conditioners, cooling units and de-humidifiers. Featured were companion heating and cooling units.

As a pioneer and exhibitor at every National Association of Home Builders' show since the event was inaugurated, H. P. Mueller, president of the division, was awarded an honorary plaque by NAHB president E. M. Spiegel.

THE PHIL RICH FAN MFG. CO. has expanded its manufacturing facilities by taking over a 10,000 sq ft building located across the street from its offices and plant at 2900 Caroline, Houston.

THE COLEMAN CO. is broadening its coverage of the residential air conditioning market by adding 5 ton models to its two former lines of 2 and 3 ton models. All models can be used with forced warm air furnaces. One model — the compressor-condenser package, using an evaporative condenser — re-uses water to cut down

improved performance — new sales appeal

for
small
gas
appliances



Hallmark
of gas heating progress

MAXITROL

Sold on the Pacific Coast by PACIFIC SCIENTIFIC CO., San Francisco, Los Angeles, Seattle, Portland

Here's the new Maxitrol RV-41 regulator, designed to bring improved performance, new sales appeal to all small gas appliances. Small and compact, it features a non-metallic resilient valve seat that provides excellent lock-up characteristics in addition to accurate regulation over a wide range of inputs.

The RV-41 saves on installation time, too. Its breather



orifice serves as its own leak limiting device in areas where these devices are acceptable. And, you can install the RV-41 in crowded, cramped places. All parts are available for servicing from the top. An inexpensive product that eliminates service call-backs, insures optimum adjustments for the life of the appliance. Maxitrol Company, 12200 Beech Road, Detroit 28, Michigan.

Tomorrow, as yesterday, you may look to MAXITROL for engineering and product leadership.

**SAVE TIME
SAVE SPACE
SAVE WASTE**

with **DUC-PAC**

New Revolutionary
Snap-Together Fittings



Here at last is a line of knocked-down duct fittings designed specifically to fill YOUR needs. DUC-PAC'S exclusive internal snap lock eliminates any "folding over" operation... improves appearance of finished job.

THEY SAVE YOU TIME

You can assemble DUC-PAC galvanized fittings in seconds. Simplified system saves time in laying out a job. Practical design of fitting saves time in installing. They just *snap* together . . . no hammer necessary.

THEY SAVE YOU SPACE

DUC-PAC galvanized fittings are shipped knocked-down, packaged 12 to a carton, require only about 10% of space needed to store old-style fittings. They save space in your truck, too.

THEY SAVE YOU WASTE

Because they're knocked-down and packed in cartons, DUC-PAC galvanized fittings don't become dented or battered in storage or in the truck. Eliminating waste keeps your costs down.

Request free descriptive bulletin
showing complete line.

DUC-PAC

DIVISION of SWETT BROS.

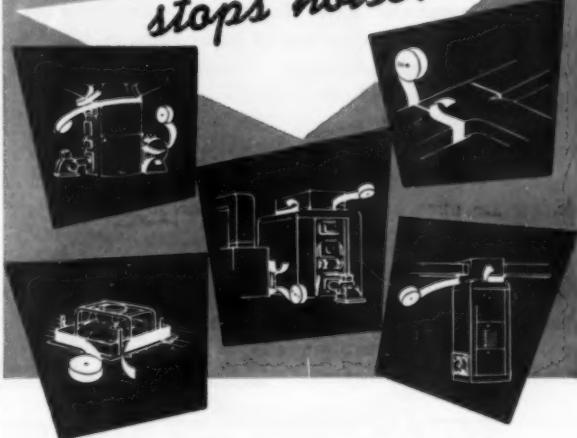
78 ISLAND POND RD., SPRINGFIELD • MASS.



**quiet jobs
lead to others!**

Grant Wilson
(Underwriters' Grade)
ASBESTOS WOVEN

Flexi-Duct
stops noise!



See how easy it is to *stop* objectionable noises and vibrations on all Heating, Ventilating and Air Conditioning Systems with fireproof *Flexi-Duct* tape. With no metal whatever in its construction, it can neither create nor transmit noise. Since it hugs metal tightly, it acts as a sound absorbing seal and requires no other gasket. Insure yourself against costly callbacks...increase your business by doing a quiet job everytime!

Installation of *Flexi-Duct* is simple... takes little time and effort measured against the money-making satisfaction the completed job means. Apply *Flexi-Duct* between blower and furnace casing, plenum and furnace casing, or on take-offs and main or branches. Mechanical rattles, starting vibrations, "on and off" cycle noises, shaft whine, fan hum and screeching are *stopped*. The resultant quiet operation—and satisfied customer—lead to more jobs for you.



Write today for free Samples and Data on
Grant Wilson asbestos woven Flexi-Duct Tape.

Handy individual cartons: 50 linear feet 6 in. wide...identifying blue striped, selvaged edges.

Grant Wilson inc.

ASBESTOS and INSULATING MATERIALS

141 WEST JACKSON BLVD. • CHICAGO 4, ILLINOIS

we hear that . . .

(Continued)

the amount necessary for operation.

The company is offering a slide rule for estimating seasonal operating costs of home cooling systems. Seasonal operating costs may be computed for homes using systems with waste water condensers, cooling towers, evaporative condensers or air cooled condensers. Builders and architects may obtain slide rules by writing to the company at 250 North St. Francis Ave., Wichita 1.

REYNOLDS METALS Co.'s new Robert P. Patterson aluminum reduction plant, located near Arkadelphia, Ark., is now in operation. J. W. Hutchison is manager of the new plant, which has an annual rated capacity of 110 million lb of virgin aluminum. About 400 workers will be employed when full production is reached.

RHEEM MFG. Co. has developed an extensive merchandising plan for gas and electric water heaters, under which dealers are offered promotion pieces including envelope stuffers, post cards, imprinted book matches, installation and servicing labels, decals, etc. A catalog lists newspaper mats available and contains a number of suggested classified ads. Also offered are radio and television live spot announcements and suggestions for tie-ins with national advertising programs.



SALES MEN of the Viking Air Conditioning Div., The National Radiator Co., dismantle blower assemblies under the supervision of company engineers

SALES REPRESENTATIVES of the Viking Air Conditioning Div., The National Radiator Co., met recently in Cleveland to discuss their sales program for the coming year and to learn about design changes in the 1954 furnace blower line. The meeting was conducted by Marion I. Levy, operating head of the division.



**WRITE TODAY FOR THE AMAZING FACTS AND
LEARN HOW YOU CAN CUT PRODUCTION
COSTS WITH A BETT-MARR**

BETT-MARR MODEL 14SM—A lower priced 2-wheel sheet metal band saw with 13½" throat is perfectly adequate for work not requiring maximum throat depth.

MODEL 24S—Complete with riser bar insert and 4 sheet metal clamps. Only 6½ inches high—compact, fits most any space—depth 44"; width 22"; table sizes 20" x 22".



MODEL 24S

BETT-MARR MFG. CO.

THE AMAZING 3-WHEEL BAND SAW designed especially for **FAST, SMOOTH** stacked sheet metal cutting

Save costly labor hours—get smoother, accurate cutting of stacked sheet metal with this new Bett-Marr three-wheel band saw. It's big enough to do most any job, small enough to fit most any space, and costs much less than any other comparable power saw.

A Bett-Marr in your shop will pay for itself quickly. Cut your production costs by stacked cutting with a saw that's especially designed for sheet metal cutting.

Does BIG! Costs LITTLE!

100 to 3000 FPM BLADE SPEEDS—Quickly adjusted for cutting iron, steel, forgings (100 FPM); stacked aluminum or galvanized sheets, bronze, brass, copper (600 FPM); wood, plastics, stainless steel (3000 FPM) without blade chatter.

CUTS 50 to 70 STACKED SHEETS—Up to 15 inches per minute; cutting accuracy is assured by case hardened guides with carbide back-up bearings (adjustable up to ½" blade width).

PERFECT BLADE CONTROL—Flanged wheels keep blade in position for smooth radius cuts and perfect straight line cuts. Blade positively will not slip off wheel in operation.

RUGGED ALL CAST FRAME—The rugged, all-cast frame gives perfect stability, eliminates blade chatter and assures smooth-cutting performance at all speeds.

POSITIVE 2-WHEEL CHAIN DRIVE—Prevents blade slippage. All ballbearings are Neoprene sealed for lifetime operation. Blade and wheels are fully enclosed for maximum safety.

HOPKINS, MINNESOTA

Both you and your customers profit when you install the
**REX AIR-PAK
BLOWER-FILTER**



Right around the corner from your shop there's a big profitable market waiting for you! One out of every five of the heating systems in your area is a gravity furnace that needs modernizing—needs an efficient and economical REX AIR-PAK BLOWER-FILTER.

The REX AIR-PAK BLOWER-FILTER—by forcing clean, filtered air into hard-to-heat rooms in winter and providing cooling ventilation in summer—steps up comfort, saves fuel and money for your customers, makes sales and profits for you.

Packaged for easy installation—powered by the sturdy, trouble-free Rex blower—cushioned on resilient rubber for quiet operation—the REX AIR-PAK is designed for many years of satisfactory service. A full range of sizes makes it simple for you to modernize any warm-air gravity heating job.

For complete details—write today to

AIR CONTROLS, INC.

Division of the Cleveland Heater Co.

2310 SUPERIOR AVENUE • CLEVELAND, OHIO

You can sell

LOW COST COOLING!



ALTON

air washer type **EVAPORATIVE
COOLER**

MAXIMUM SALES POSSIBILITIES — Offer your customers the finest in evaporative cooling. Ideal for retail stores, markets, taverns, churches, factories, theaters, etc. Contains features not available on ordinary evaporative coolers, such as the "AquaSpray", which sprays and recirculates the water; and two sets of filters that eliminate moisture "pull-through."

BEST BUY IN COOLING UNITS — Preferred by merchants everywhere, this air-washer type evaporative cooler offers them more efficient cooling per dollar than any other comparable unit.

LONG LIFE AND EASY OPERATION — Alton coolers last longer, with their all-galvanized cabinets, and are easier to install and operate. You will appreciate the elimination of service calls.

GET THE FACTS!

**WRITE
TODAY!**

Please send complete information about the Alton "Air Washer Type" Evaporative Coolers.

**ALTON MFG. CO.,
1112 Ross Avenue,
Dallas, Texas**

Name

Address

City State

FLANGES THE DUCT

IN LESS THAN
5 SECONDS

Works like a bar-
folder with a new
twist.

Handling the
work back and
forth has been
eliminated by a
unique manipula-
tion of the bender
itself.

"Best
little tool
in the shop"



No money tied up in idle equipment . . . And no time wasted in making adjustments . . . Fits any size ducts up to width of bender and any thickness up to 20 gauge mild steel.

No. 12 SMITH'S CLEAT BENDERS (12" Wide) \$46.20*
No. 18 SMITH'S CLEAT BENDERS (18" Wide) \$72.60*

*Prices subject to change without notice
FOB Waukegan, Illinois

R. E. SMITH

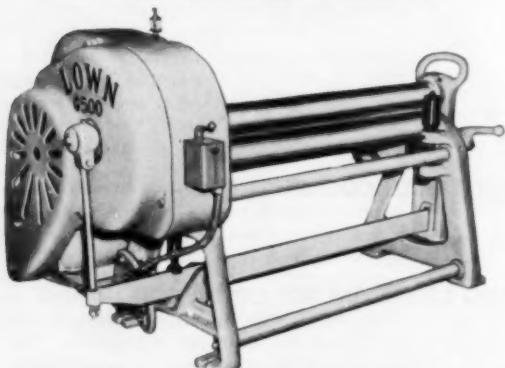
P.O. BOX 78

WAUKEGAN, ILLINOIS

1122-30 ELIZABETH

LOWN SLIP ROLL FORMING MACHINES

Model G-500
featuring Cone Rolling Attachment



Model G-550 Lown Slip Roll Former with 5" x 30" rolls, all power driven

A new improved modern design, engineered for durability, strength and service.

- Initial Pinch Type — Alemite Lubrication
- Capacity Model G-550, 8 - 10 gauge 4' wide. (Available in shorter or longer lengths)
- Quick Acting Latch on Drop Arm.
- Handwheel Adjustment of Rear Roll.
- Roll Position Indicators.
- Gear and Shaft Housing of rigid Unit construction.
- Fast, sturdy, easy to operate. Prompt Deliveries.
- Other machines with 2" to 9" dia. rolls also available.

Dealers in Principal Cities

Write for Bulletins—Mention this Ad

SAN ANGELO FOUNDRY & MACHINE COMPANY

1200 Park Ave.

Mt. Vernon, Illinois

we hear that . . .

(Continued)



F. E. Munschauer, Jr.

FREDERICK E. MUNSCHAUER, JR., has been elected to the new office of vice president in charge of manufacturing and industry relations of the Niagara Machine & Tool Works. He will continue in his duties as works manager, a position he has held since 1946.

THE TYPHOON AIR CONDITIONING CO., Inc., is conducting a series of regional training schools offering instruction in air conditioning. First in the series was held in St. Louis, and was attended by dealers from various parts of the United States and Canada. The second school was scheduled to start March 15 in Los Angeles, and following that there will be another starting March 22 in New York.

THREE FIVE-DAY factory service schools have been held so far this year by the Janitrol Div., Surface Combustion Corp., at its Columbus, Ohio, plant. Five additional courses are scheduled to be held beginning March 22, April 12, May 3, May 24 and June 14. The division's

For removing a **LARGE VOLUME**
of Fumes or Air at **HIGH VELOCITY**



**VERTICAL
DISCHARGE
FAN**

Whenever you face the problem of discharging fumes or vapors through a roof ventilator so that they will not short circuit back through building openings, you'll find the solution in this new Vertical Discharge Fan. It is designed especially for industrial applications that require the removal of a large volume at high velocity. The "VD" roof fan is fabricated of zinc-coated iron sheet with welded construction throughout. Automatic wing dampers open with air blast, close weathertight when not operating. The "VD" is available as direct drive with motor mounted inside air stream or as "VDR" with motor mounted outside throat of ventilator. Either type is available in a wide range of capacities and sizes.

Write for catalog on complete
line of roof ventilators.



**PRODUCTION
PLANNING CO.**

ROCHESTER, MICHIGAN

Roof Ventilators for Every Commercial and Industrial Need

we hear that . . .

(Continued)

dealers throughout the country are eligible to send their service representatives to the school for special courses in servicing gas, air conditioning and oil heating equipment. Service men may take the complete course or, if they desire, only parts of it.

A SCHOOL FOR DISTRIBUTOR service personnel was conducted by the Air Conditioning Div., Servel, Inc., during the two weeks beginning February 15. Covered in the course were the servicing and maintenance of both absorption type year 'round air conditioners and self contained electric units. A second school was scheduled to begin March 15.

A DISTRIBUTORSHIP in Louisville, Ky., is to be established for test purposes under the temporary control of Carrier Corp. This distributorship will be headed and partly owned by Arthur P. Shanklin, for many years a vice president of Carrier. In making this announcement, Cloud Wampler, president of the corporation, stated, "The action taken does not represent any change in our basic distribution policies. But we believe that the new company can be used advantageously to test various aspects of our sales, merchandising and product programs."

"CORRECT PRACTICE in OIL HEATING"

NOW AVAILABLE TO YOU!

A complete reprint of the valuable series

by J. J. Mirabile

This practical series covers every angle of oil burner work, including arrangement of shop . . . stocking of parts . . . record-keeping . . . installation procedures . . . the handling of crews . . . how to make heating surveys . . . how to size combustion chamber . . . how to install thermostat . . . how to start the burner . . . how to use testing instruments . . . and how to operate a service department. It contains, as well, a complete list of causes and cures of oil burner troubles that will serve as a reliable guide in making service calls.

Every shop handling oil burner jobs should own this book. Full size, 8½ by 11 inches — 57 pages of practical helps. Send \$1.00 for a copy to the address below.

KEENEY PUBLISHING COMPANY

6 No. Michigan Avenue

Chicago 2, Ill.

How to Find and Keep New Business During Your "Slack Period"



There's no "slack period" in the furnace and boiler cleaning business. The cleaning business keeps your service crews busy all year, contacts and KEEPS new customers by firmly establishing you as an authority — the man to call for all other heating needs.

Join the many others who are building cleaning businesses this year with high quality Premier Furnace and Boiler Cleaners. Premier machines are the world's most widely used furnace cleaners!

- Separately ventilated motor — prevents burnouts on hot jobs.
- Extra large filter area — for continuous, on-the-job operation.
- Dual purpose — powerful vacuum unit PLUS portable hand blower.

Premier Furnace Cleaners, the oldest name in the furnace cleaning business, make cleaning jobs easy, keep the jobs profitable. Compact, easy to handle, a low cost Premier Cleaner allows one man to average four profitable jobs a day. And customers like the way Premier units handle messy work so thoroughly and quickly.



755 Woodlawn Avenue, St. Paul 1, Minnesota

TAKE THE FIRST EASY STEP TO A NEW, MONEY-MAKING BUSINESS — WITH THIS COUPON. Be ready for the warm-weather slack period. Act now!

PREMIER COMPANY, Dept. 406
755 Woodlawn Ave., St. Paul 1, Minnesota

Without obligation, please send complete details on the Premier Furnace Cleaner.

NAME

FIRM

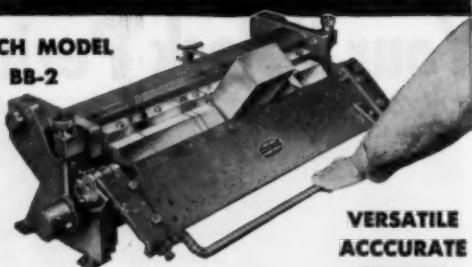
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CITY ZONE STATE

**Bending Sheet Metal
UNIVERSAL BOX and PAN
BENDING BRAKE**

BENCH MODEL

BB-2



**VERSATILE
ACCURATE
STURDY**

This CHICAGO hand bending brake is ideal for bending sheet metal up to 18 gauge and 24" wide. Model and experimental shops, production departments find this machine unmatched for single pieces or production runs in folding, box and pan work, and a limitless variety of straight bending operations. Very little experience is required to do accurate and fast work.

Write for full particulars

Steel Bending Brakes for over 50 Years

424

**DREIS & KRUMP
MANUFACTURING COMPANY**

7404 S. Loomis Blvd., Chicago 36, Illinois



**W. A. WHITNEY LEVER PUNCHES
FOR EVERY SHOP AND TOOL BOX**

No. 4B Punch



Also supplied with
three punches and
three dies in a card-
board carton

Capacity — $\frac{1}{4}$ " hole through 16 gauge metal
Length — $8\frac{1}{2}$ " Depth of throat — 2"
Weight — 3 lbs. Stock size punches 1/16 to
 $9/32$ " by 64ths.

Write for catalog —
then contact your
jobber.

W. A. WHITNEY MFG. CO.
636 RACE ST. ROCKFORD, ILL.

appointments . . .



M. T. Bard



F. J. Laughna



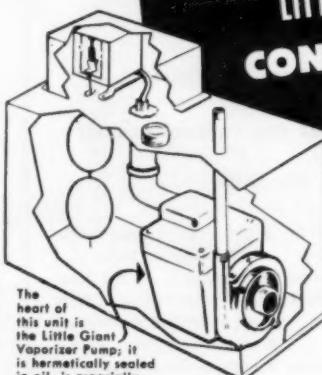
S. A. Anderson, Jr.

M. T. BARD as sales manager for the Airtemp Div., Chrysler Corp. Mr. Bard joined the division in 1941 as director of commercial refrigeration sales. Since 1951 he has been assistant general sales manager. F. J. Laughna has been appointed assistant sales manager in charge of the newly formed central sales division. He will direct sales operations in the Dayton, Detroit, Chicago, Kansas City (Kansas) and St. Louis sales regions. S. A. Anderson, Jr., will be in charge of the southern sales division, covering the Dallas, New Orleans, Atlanta and Miami sales regions. Other new appointments include A. J. Schiffmann, as assistant sales manager of the eastern sales division; Dean E. Parke as sales manager of the Chicago region; and W. E. Edwards

**SOLVE THE PROBLEM OF CONDENSATION
IN YOUR REFRIGERATION!**

with the...

**LITTLE GIANT
CONDENSATE
PUMP**



Designed especially for removing the condensation of air-conditioning units and mechanical refrigeration . . . also useful in sump installation. Model C-2 operates on 110 volt, 60 cycle current; Model C-3 available for either 110 volt, 60 cycle current or 220 volt single phase.

- Complete and ready to install
- Positive displacement switch
- Coated throughout to prevent corrosion
- Vaporizer Pump guaranteed for one year
- Completely automatic
- Small & Compact . . . Quiet in Operation

Little Giant Vaporizer Co., Inc.

5101 Classen Blvd.

F. O. Box 3535

Oklahoma City, Okla.

appointments . . .

(Continued)

as manager of the Atlanta regional sales office. R. A. Gonzalez and R. H. Friedel have joined the staff of J. F. Knoff, vice president in charge of sales. Mr. Gonzales will handle special air conditioning engineering assignments and Mr. Friedel will have charge of special sales assignments. The Warren Barr Supply Co., 900 N. Spaulding Ave., Chicago has been appointed Chicago area distributor to handle residential heating and air conditioning equipment.

EUGENE H. WILSON as district merchandising manager handling room air conditioning units for Carrier Corp. He will make his headquarters at the company's Atlanta office and will work with distributors in Georgia, Florida, Alabama and Tennessee. Guy Stoltz, for three years manager of the Houston office, has been named manager of the Jacksonville office. Florida Weather Engineers, 400 N. Beach St., Daytona Beach, has been appointed exclusive dealers in Volusia and Flagler counties, Fla.

CHARLES O. SLABY as manager of the western zone office for the Coleman Co., Inc., with offices at 14th and Farnam Sts., Omaha. Territory covers the states of Nebraska, Colorado, Idaho, Iowa, Kansas, Minnesota,

Cut Installation Costs! One hammer blow permanently rivets



E-Z-ON Damper Controls are easily, quickly installed to save you time and money. E-Z-ONS lower initial cost offers you additional savings and extra profits. Start saving money now. . . . Call your jobber today!

LEADING JOBBERS STOCK "EZ-ONS"
In Canada — THERMIDAIRE CORP. LTD. Toronto

M.A. GERETT CORP.

724 WEST WINNEBAGO STREET, MILWAUKEE 5, WISCONSIN



BARTH products include:

- Squaring Shears
- Slitting Shears
- Hand Brakes
- Slip Roll Formers
- Bar Folders
- Groovers



A "Must" for Any Shop . . . BARTH Crimpers and Beaders

Available in two models to handle 20 and 24 gauge materials. Heavier model (illustrated) can be converted to direct drive when used as independent crimper. Both machines may be adjusted to give shallow or deep crimp as desired. Regular equipment includes crimping, ogee beading rolls, plain collars, gauge, wrench and bench standard.

REQUEST FREE ILLUSTRATED BULLETINS ON BARTH PRODUCTS.
DISTRIBUTORS OF CONNECTICUT BRAKES.

BARTH ENGINEERING and MANUFACTURING CO., INC.
MILDALE • CONNECTICUT • U.S.A.



Available in 2 Ranges
• 0-1000 Ft./Min.
• Double Scale:
0-3000 Ft./Min.
0-35 Miles/Hr.

- A practical, accurate air velocity meter for heating, air conditioning, and ventilating work. Indispensable for measuring grille velocities and air deliveries from registers and grilles; for balancing forced air heating systems, and for checking air distribution of all kinds of ventilating systems.
- Accurate velocity readings, automatically averaged over a 3" dia. free area, instantly indicated in feet per minute.
- Extension handle facilitates positioning of instrument away from the observer for readings in hard-to-reach locations, or where the observer's body would interfere with the normal air movement.
- Unique scale lock makes possible to retain scale reading when desired until the lock is released—an indispensable feature where extension rod is used to position instrument away from the observer.
- Leather case is furnished as standard equipment for added protection when the instrument is not in use and for convenience when carrying it in the pocket.

Ask your Jobber for the Flortite or write for Leaflet 760.

BACHARACH INDUSTRIAL INSTRUMENT CO.
7301 PENN AVENUE • • PITTSBURGH 8, PA.

In to stay when you use



Hardened

Screwnails

for fastening

SHEET METAL to WOOD
WOOD to WOOD

or other fastenings
where you need

NAIL DRIVING SPEED with
SCREW HOLDING POWER

Ask your P-K Distributor for samples and
the SCREWNAIL folder, or write:
Parker-Kalon Division, General
American Transportation Corporation,
200 Varick St., New York 14.



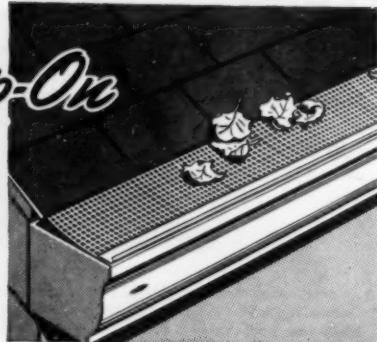
PARKER-KALON® FASTENERS

EVERY HOME NEEDS THE
LABOR SAVING PROTECTION

of

Snap-On

GUTTER
GUARDS



KEEPS LEAVES AND BIRD'S NESTS

out of gutters. No clogging of down-spouts and sewers
NO MORE DANGEROUS LADDER CLIMBING
guards are permanent — leaves blow away

EASILY INSTALLED —

upper edge tucks under shingles and aluminum moulding,
snaps on to lip of gutter

PACKED — 48-2' sections in attractive display box —
Sell every home owner — you do him a real service, and
make an extra profit.

See Adv. in APRIL — HOUSE & GARDEN

Write for prices, literature, and full details, and name
of nearest distributor.

LOCKHART MFG. CORP.

6350 E. Davison

• Detroit 12, Michigan

appointments . . .

(Continued)

Missouri, Montana, Nevada, Oklahoma, Oregon, South
Dakota, Utah and Washington.



R. L. Larson



W. P. Loehrer



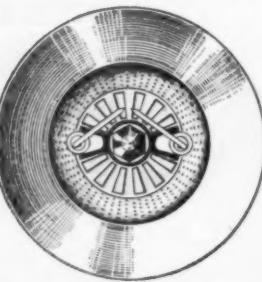
M. J. Hartigan

ROBERT L. LARSON as manager of the alloy steel division of Joseph T. Ryerson & Son, Inc. He was formerly manager of alloy steel sales for the Chicago plant. In his new position he will coordinate alloy steel sales and related activities at 16 plants throughout the country. Succeeding Mr. Larson as manager of alloy steel sales at the Chicago office is William P. Loehrer, formerly a representative of the alloy and stainless steel department. Martin J. Hartigan has been appointed manager of supply purchases, to coordinate activities in connection with the purchase of plant and office supplies for the company's 16 steel service plants.



*I give my customers
the BEST!*

Correct
PULSATION
and
POOR CO₂
with a
BOSTON COMBUSTION HEAD



Adaptable to any pressure atomizing burner, .75 to 3.0 G. P. H. This precision head is now available. Adjustable air shutters permit obtaining high efficiency sunflower flame or efficient non-pulsating flame.

Comes complete—easily installed.

A PROFIT MAKER

Write for literature and instruction sheet.

BOSTON MACHINE WORKS COMPANY

Oil Heating Supplies Division, Manufacturers, Lynn, Mass.

appointments . . .

(Continued)

MITCHEL LANDAU as New England manager of sales and engineering for Duc-Pac Div., Swett Bros., Inc. Mr. Landau will handle the company's redesigned line of galvanized prefabricated duct and fittings.



M. Landau



T. H. Jeffers

THOMAS H. JEFFERS as assistant general manager of the Anaheim Div., the Robertshaw-Fulton Controls Co. Mr. Jeffers, formerly chief engineer for the Anaheim office, has also been elected assistant vice president of the company. Robert O'Hara has joined the staff of the company's Fielden Instrument Div., as sales engineer. He was formerly on the staff of the application engineering department in Philadelphia. Hoyt-Grant Co., Inc., P. O. Box 6157, New Haven, has been appointed sales

BEVERLY THROATLESS SHEARS



MAKE CUTS LIKE THESE

QUICKLY...
EASILY...ACCURATELY



18 ga. metal
cut with
Model B-1
Shear.
Save time, labor and material
use a Beverly to make any
cut . . . straight, curved or
irregular in any metal.
Exclusive design
allows work to be
turned at any
angle while
cutting. Standard
in the industry
for years. 4 models—
capacities to $\frac{3}{4}$ " mild.

See your Beverly Dis-
tributor for a demonstration. Write
for FREE illustrated cir-
cular on Beverly
metal cutting Shears.

Beverly SHEAR MFG. CO.

3020 W. 111th STREET • CHICAGO 43, ILLINOIS

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this easy way



**PARKER-KALON®
FASTENERS**



Built by men who understand the problems of furnace cleaning, the Grand Rapids Furnace Cleaner has been developed into a highly serviceable unit meeting all the requirements for faster, easier and more profitable cleaning:

DURABLE—COMPACT CONSTRUCTION • LIGHTWEIGHT ALUMINUM HEAD ASSEMBLY • HIGH POWERED MOTOR • 8" DIAMETER ROTARY FAN • LARGE CAPACITY HEAVY DUTY STEEL TANK • FLEXIBLE RUBBER CLEANING HOSE WITH 2" INSIDE DIAMETER • EFFICIENT OUTSIDE FILTER BAG • FREE ROLLING SWIVEL-TYPE CASTER WHEELS • ENGINEERED FURNACE CLEANING ATTACHMENTS.

Write today for complete information

Doyle VACUUM CLEANER CO.

227 STEVENS ST., S.W. GRAND RAPIDS 7, MICH.

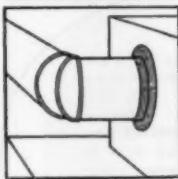
ANGLE RINGS

ROLLED TO SPECIFICATION!



SMOKE STACKS

You can rely on our ability to furnish Leg Out ANGLE RINGS correctly rolled to specified size for use in smokestack construction. Bolt or rivet holes are accurately punched and spaced for quick and easy assembly.



VENTILATING DUCT LINES

We also roll Angle Rings in all sizes for round duct connections in air conditioning, heating and ventilating systems.

All Rings correctly made to size—with a true circle and 90° angle. Furnished with or without bolt holes.

EXHAUST FANS

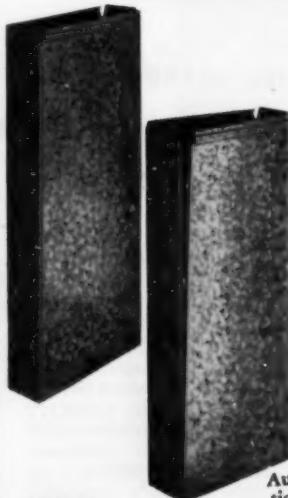
Angle Rings save time and money in the assembly of fans of all types. Provides a solid and firm reinforcement for fan units as illustrated. Built to fit your particular assembly in any quantity.

Write for list of stock sizes and discounts—also our illustrated circular describing our complete fabricating service.



NATIONAL METAL FABRICATORS
2140 S. Sawyer Ave. Chicago 23, Ill.

ALL YOUR NEEDS In DUCTS and FITTINGS



AJAX

- Highest Quality
- Precision Made
- Quick Assembly
- Forced Air or Gravity
- All Systems

Fittings, Pipe and Duct are die cut and formed, fit up tight and fast with AJAX Automatic Snap Lock connections.

For extra profits, use AJAX Pipe and Fittings to save you installation time and labor.

WRITE TODAY

New complete line catalog complete with helpful data.

DIVISION OF
THE CINCINNATI SHEET METAL
& ROOFING COMPANY

**AJAX
FURNACE
FITTING CO.**

216-20 E. Front St.
Cincinnati 2, Ohio

appointments . . .

(Continued)

representative for the division, covering the state of Connecticut and four counties in Massachusetts. Nick Ruge Sales Co., 1001 E. New York St., Indianapolis, will represent the division in the southern part of Indiana. K. P. Knudsen & Co., 305 Techwood Dr., N.W., Atlanta, will cover the state of Georgia, and Otto J. Leone, 1918 Investment Bldg., Pittsburgh, will handle western Pennsylvania and the northern half of Virginia.



W. W. Woodroof



H. E. Rossell, Jr.

W. WALTON WOODROOF as manager of cooling sales for the Sunbeam Air Conditioner Div., American Radiator & Standard Sanitary Corp. He will make his headquarters in Pittsburgh. Henry E. Rossell, Jr., has been appointed manager of dealer development for the

classified advertising

Is the quick, economical way to find what you're looking for. Check the classified page each and every issue for real bargains and hard to find items. It's a quick and sensible means too, of disposing of tools, equipment, and anything else for which you no longer have use. Check the classified page for rates.

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- Equipment Needs
- Manufacturers Agents
- Lines, etc.

Whatever your needs in any of the above classifications . . . you can solve them quickly with a classified advertisement. The space rates are reasonable and results are quick. Closing date — the twentieth of the month preceding issue.

appointments . . .

(Continued)

division. Mr. Rossell was formerly district representative at Silver Spring, Md.

NED P. KIMBERLY as district sales manager of the Cleveland area for the Fiber Glass Div., Libbey-Owens-Ford Glass Co. Mr. Kimberly has served as a sales representative in the Cleveland district since February 1953.

JOHN BILLIE as New York sales manager for Plasteel Products Corp. directing sales of roofing and siding products.

W. K. SMITH as field sales manager of the Union Asbestos and Rubber Co.'s heating division. Until his recent appointment, Mr. Smith was district manager of the heating division of the Fedders-Quigan Corp. The Heating and Cooling Products Co., 506 N. Dearborn St., Chicago, has been appointed sales representative for the company's "Unarco" heating and air conditioning units in the Chicago area.

KARL M. MIDNEY, formerly president of Metal Industries, Inc., as district manager covering the Florida territory for Reznor Mfg. Co. Mr. Midney's offices will be located at 315 Lotus Path, Clearwater. James

Libert Hi-Speed **SHEAR**

CIRCLE CUTTING ATTACHMENT
Included as
STANDARD EQUIPMENT
with this Machine



•SIMPLIFIES
Maintenance

•SPEEDS
Production

•SAVES
Manpower

The *Libert* has amply proved its advantages by turning out top production—shearing flat or formed sheet metal, internal or external, plain or irregular shapes rapidly, accurately, cleanly!

Equally effective in maintenance work, *Libert* is cutting costs to rock bottom. Edges are smooth, need no finishing. Unskilled operators produce accurate work at once.

Sizes up to
60-in. throat, 10-gauge capacity.

MODEL
1236
36-in. throat,
12-gauge capacity.

WRITE FOR
BULLETIN

LIBERT MACHINE COMPANY
Green Bay, Wisconsin

WEBCO *the portable* SHEET METAL BENDING BRAKE



The WEBCO brake offers the Slip End, Sliding Folding Fingers, and many other important features. The WEBCO will make bends up to 52°. Write for detailed information to:

HALLMOR INC.

McMURRAY ROAD
BRIDGEVILLE, PA.

QUIET AUTOMATIC
OIL FURNACES

SUSPENDED
Or Laydown Air Conditioning
FURNACES



SPACE SAVER...and a Labor Saver
It comes completely assembled including combustion chamber. For Garages, Service Stations, and Basementless Homes. Made in sizes from 75,000 BTU to 600,000 BTU.
Approved by Leading Oil Companies, Underwriters and Municipalities. WRITE TODAY FOR FULL DETAILS

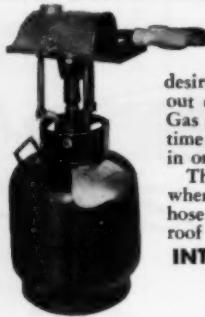
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QUIET AUTOMATIC BURNER CORP.
J. G. KAVENY, President
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SOLDERING IRON HEATER



Sheet metal contractors can now have hot soldering irons in 2 minutes and with Insto-Gas they can be kept at the desired temperature all day long without even looking at the heater. Insto-Gas saves 40% on fuel cost and enough time to pay for the entire equipment in one week's operation.

The Insto-Gas soldering iron heater when attached to the cylinder by 50-ft hose can be operated on a scaffold or roof without moving the cylinder.

INTERNAL FIRED SOLDERING IRONS



These Insto-Gas soldering irons are designed for continuous operation with no stopping to change irons. Made in two sizes; the No 1-S (2) for fine work and the No 2-S (5) for heavy soldering.

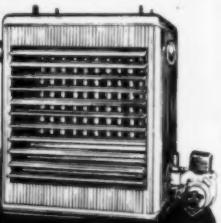
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INSTO-GAS CORPORATION
DETROIT 7, MICHIGAN

3 SPECIFIC SOLUTIONS TO 3 SPECIFIC HEATING PROBLEMS Only DELTA Makes All 3!



DELTA DIRECT-FIRED OIL UNIT HEATER



For lowest cost industrial heating. Ideal for factories, warehouses, commercial buildings, and locations requiring high velocity air delivery.

DELTA SUSPENDED-HORIZONTAL FURNACE



Especially shallow for narrow crawl spaces and attics. Larger models for offices, partitioned spaces, stores, gas stations.

DELTA GUN-TYPE FLOOR-O-LEVEL FURNACE



Provides an extremely effective, yet extremely economical central heating system for small cellarless homes.

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FOR THE FACTS!

SEE OUR ENTIRE LINE AT THE NATIONAL INDOOR
COMFORT EXPOSITION - BOOTHS 151-153
DELTA HEATING CORPORATION, TRENTON 8, NEW JERSEY
In Canada - Kresne-Stamm • Montreal 24, Canada

appointments . . .

(Continued)

Sweeney has been appointed assistant to Lester Crahan, district manager of the company's California territory.

H. R. NIELSEN as manager of the air conditioning division of Servel, Inc. Mr. Nielsen, formerly sales manager of the division, takes over the executive duties of John A. Gilbreath, former assistant vice president, who resigned recently. The Boyd Engineering Co., Inc., with offices in Albuquerque and El Paso, has been appointed distributor for the company's air conditioning equipment in New Mexico and western Texas.



H. R. Nielsen



R. Von Rotz

ROBERT VON ROTZ as chief engineer of Tuthill Pump Co. Previously, Mr. Von Rotz served as chief engineer with Applied Research and Development Corp.

Convert Gravity Furnaces With A CIRCULATAIRE Bonnet Blower



FITS IN THE BONNET

CIRCULATAIRE ELIMINATES COLD ROOMS, BALANCES HEAT DISTRIBUTION, SAVES FUEL

CIRCULATAIRE solves the problem of "hard to heat" rooms, boosts warm air quickly through all the heating pipes. CIRCULATAIRE is easily and quickly installed without removing the bonnet. Packaged unit includes motor and fan control. No new sheet metal work required, no changing of cold or warm air pipes, no baffles to be built. The CIRCULATAIRE is rigid, quiet and efficient in operation.

NOW READY - New CIRCULATAIRE Sales Aid adds effectiveness to selling interview, conserves valuable selling time and increases sales.

A COMPLETELY PACKAGED UNIT
Nothing for the dealer to furnish except limited amount of labor



GET THE FACTS TODAY! WRITE...

CIRCULATAIRE DIVISION OF CORLETT-TURNER CO.
1007 S. KOSTNER AVE., CHICAGO 24.

appointments . . .

(Continued)

A. DEPUY as sales manager of a new trade division formed by Minneapolis-Honeywell Regulator Co., to coordinate activities within the Heating Controls Div. Mr. DePuy will be responsible for coordinating policy, planning and personnel requirements of the wholesaler, home builder and dealer markets. Directing these three fields will be Walter Baak, wholesale sales manager; Eldon Richardson, home building market manager; and Hal Chamberlain, dealer market manager.



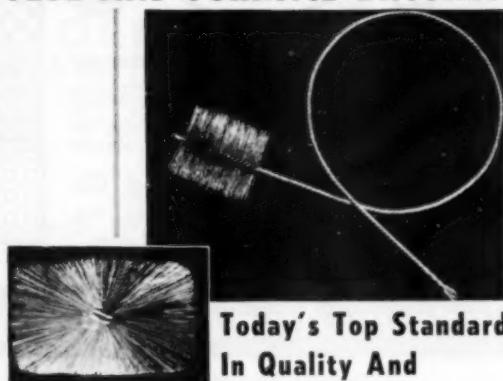
A. DePuy



K. M. Fournier

KENNETH M. FOURNIER as assistant to the president of Skuttle Mfg. Co. Mr. Fournier has been with the company in various supervisory positions for the past 18 years.

SCHAEEFER FLUE AND FURNACE BRUSHES



Today's Top Standard
In Quality And
Cleaning Efficiency

Rectangular Wire Brushes with Handles

Specially developed "Silver Brite" Rustproof Wire means longer wearing, better cleaning, with these Schaefer brushes. In three sizes with 4-foot wire handles. Also available in black oil tempered wire. Write for special prices and complete catalog No. 650 on Schaefer Boiler and Furnace Brushes.

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SCHAEEFER BRUSH MFG. CO.
117 W. WALKER STREET • MILWAUKEE 4, WIS.

SCHAEEFER BRUSHES
—MILWAUKEE—

BUY SCHAEEFER
...IT'S SAFER

In Air Conditioning Today

THE NAME'S LOMBARD



Lombard

HAS MORE CAPACITY

Highest cooling capacity. Exclusive inter-fin design develops as high as 8750 BTU per hour under ASRE conditions.



Lombard

IS ALL METAL

Sturdy all-metal cabinets. There's no plastic to break and chip.



Lombard

HAS THE QUALITY

From its G. E. fan unit to its complete three-way thermostatic operation, Lombard is quality-built for years of trouble-free service.



Lombard

HAS THE LOOKS

Soft metallic gray-green in color, the Lombard is styled to blend with any decor. Inconspicuous controls and panel airflow grilles present neat, trim appearance.



and Lombard

IS PRICED RIGHT TO SELL

Compare. Match it feature for feature. Then get the price and you'll see why — in air conditioning today . . . it's truly LOMBARD.

GET THE FACTS!

LOMBARD MANUFACTURING CO.

YOUNGSTOWN

OHIO

MOREY FLOAT VALVES

Both valves operate either horizontally or vertically

WITH STAINLESS STEEL SEAT
AND COMPRESSOR TRIGGER
BRASS BODIES



LIST PRICE

\$1.60 each

Large Size or Small

Stainless steel orifice, brass wing nut and bolt. Neoprene gasket. High impact Neoprene Styrene float. STOCKED BY JOBBERS — 12 valves per carton. 6 cartons per case. Subject to standard jobbing discounts.

FLOW DATA

Large Valve: 240 gallons per hour at 60 p.s.i.

Small Valve: 190 gallons per hour at 60 p.s.i.

Will work in 1 inch of water!

Used as original equipment on evaporative coolers of outstanding reputation. Excellent on poultry and small stock troughs as well as cooling towers!

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1. More coverage per gallon
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Yes, 370 Special can save you money. Users report it covers more than five squares per gallon . . . sets up in 4 or 5 hours. It pleases your customers because it *really protects* against corrosion. Also available in green, blue, gray, brown and aluminum. ORDER 370 SPECIAL NOW FROM YOUR DISTRIBUTOR, or write for complete details and prices.

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1085 Allegheny Ave., Oakmont, Pa.
Established 1847

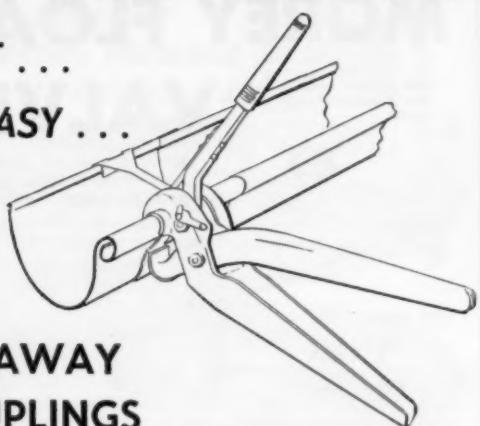


SPlice GUTTERS WATER TIGHT

FAST . . .

EASY . . .

With



MELAWAY COUPLINGS

Adjustable for 4-5-6" half round gutter.

Will align gutter and square miters. Gutters may be joined at the eave as easily as on the ground.

Prevents expansion damage to gutter. The only satisfactory method for repairing gutter. Applicator guaranteed.

Write MELAWAY CORPORATION

BRANDON, WIS.

PHONE 1361

appointments . . .

(Continued)

GILBERT ENGINEERING CO., Dallas, as representative in the northeast Texas area for Marlo Coil Co. Leslie S. Gilbert, president of the Texas firm, has spent 27 years in the heating and air conditioning field.



L. S. Gilbert



K. J. Black

KENT J. BLACK as sales representative in western Ohio for the Janitrol Div., Surface Combustion Corp. In his new position, Mr. Black will work with utility engineers and dealers.

FRANK B. DAVIS, P. O. Box 4745, Atlanta, Ga., as sales representative for Trade-Wind Motorfans, Inc. His territory will include North Carolina, South Carolina, Georgia, Alabama, Florida and eastern Tennessee. Ed-

DIAMOND
TRADE MARK
GRILLES

Look Better — Last Longer

Superior workmanship and finish in heavy-gauge metal assures installations of lasting beauty. Most designs stamped in any thickness, up to one-fourth inch, from any metal. Catalog No. 36 illustrates all designs and gives complete working data. Free on request.

Diamond Manufacturing Co.
Box 34 Wyoming, Pa.
Sales representatives in all principal cities

Soldering Aluminum is easy

WRITE
TODAY
FOR FREE
SAMPLES

Permanent aluminum soldering is made simple and easy with ALLEN Alumi-Soder. Complete in itself, flux and solder are combined in exactly the right proportion in a convenient "handy-to-use" stick.



L. B. ALLEN CO. INC.
6702 Bryn Mawr
Chicago 31, Ill.

appointments . . .

(Continued)

ward A. Damrau Co., 557 S. Braddock Ave., Pittsburgh, will cover eastern Ohio, western Pennsylvania and West Virginia. Cressy Sales Co., 819 Royal St., New Orleans, presently covering Louisiana, will add the state of Mississippi to its territory.

JOHN P. MEHLHOPE as sales engineer for H. Lieblich & Co., Inc., 36 W. 66th St., New York City, distributors of oil burners for S. T. Johnson Co. Mr. Mehlhope will contact dealers and contractors in the New York-New Jersey metropolitan area.

E. M. TARNOFF Co., with offices in Norwalk, Conn., and in New York City, as northeastern factory representative for the National Heater Co., St. Paul.

BURT VICKERY, 920 Fugate Ave., Charlotte, N. C., as sales representative in Virginia, North Carolina and South Carolina for Sun-Ray Burner Mfg. Corp.

J. B. LAMMONS Co., 1596 Madison Ave., Memphis, as cooling tower representative in the Memphis area for Binks Mfg. Co. This territory includes parts of Tennessee, western Arkansas and northern Mississippi.



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STAMPINGS & SPINNINGS**
Zinc Ornaments Available From Stock. Copper, brass, bronze, aluminum and stainless steel ornaments made up promptly.
If you don't have catalog K, send for it NOW.
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A new postal regulation relating to the handling of undelivered mail may result in some issues of *American Artisan* being thrown away instead of being returned to us — as they have been in the past — for remailing to your new or correct address.

To avoid missing any issue of *American Artisan* it is more important than ever to report both your new and old address to us and your post office. Deadline is the 18th of the preceding month for the next issue. Send changes — and new local postal delivery zone — to

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Asbestos Paper - Pipe Covering - Asbestos Cement
INSULATION FOR ALL NEEDS

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For Perfect Soldering
and GREATER PROFITS
in less time use Rubyfluid, the fast
acting easy-to-use soldering flux that
wets out freely, properly conditions
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Sizes from
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Easy Flow VENTILATORS

The Greenheck Industrial Turbine -- Outstanding in rugged construction -- No ventilation task too big -- Made in Sizes from 14 to 36".

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SCHOFIELD WISCONSIN

-BB-

AVAILABLE AGAIN — STAINLESS-STEEL

"PRE-WAR" QUALITY.
ROOF DRAINAGE.

FULL LINE

EAVE TROUGH HALF ROUND
STYLE "K" GUTTER
CONDUCTOR PIPE
ALL FITTINGS AND ACCESSORIES.

SOLD THRU LEADING JOBBERS EVERYWHERE

BERGER BROS. CO.

229-237 Arch Street

Philadelphia 6, Pa.

MANUFACTURERS OF

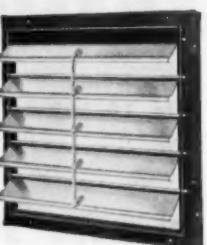
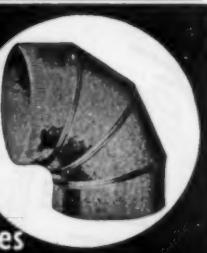
FURNACE PIPE AND FITTINGS,

Prefabricated Ducts,

also conductor pipe, eaves
trough, drip edge, rake strip, etc.

THOR METAL PRODUCTS CO., INC.

Box 118 Eastwood Station



"ELGO" TYPE
AUTOMATIC SHUTTER
Front View (Open)

Elgo Ventilating

Specialties

A TIGHTER FITTING AUTOMATIC SHUTTER!

Because every louver is weather-stripped, the Elgo Automatic Shutter is always tightly closed against air currents when not in use. And because the louvers are made of aluminum, they open the instant the fan or blower starts. No blade flutter. Sizes from 12" to 72" square — also rectangular.

Write for catalog and prices

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CATALOG

ELGO SHUTTER & MANUFACTURING CO.

2738 W. Warren

Detroit 8, Mich.

KIRK-BLUM

...one piece
BLOW PIPE ELBOW
SAVES YOU MONEY

- HOODS
- BALL JOINTS
- FLOOR SWEEPS • BLAST GATES
- STAMPED AND ROLLED ANGLE RINGS

Cheaper and stronger than the ordinary pieced elbow, KIRK & BLUM'S One-Piece Elbows are rolled into a tube, then crimped on an exclusive machine to form a super tight, rigid elbow. These and other blow pipe parts, made in production quantities, are superior, cost less than the ordinary kind. Made in light to heavy gauges, from 3-inch to 14-inch diameter. Write for literature and prices.

THE KIRK & BLUM MANUFACTURING CO.
3180 FORER ST. • CINCINNATI 9, OHIO

Ball Joints Any Size

appointments . . .

(Continued)

CARNS, HOAGLUND & TURNER Sales Co., 1600 W. Jefferson, Phoenix, as representatives for heating and air conditioning products in the state of Arizona for McQuay, Inc. V. J. Carns, president, and James B. Hoaglund, secretary-treasurer, were both formerly associated with Boyd Engineering Co., Inc. John C. Turner, vice president, was formerly manager of the air conditioning department for Henson Robinson Co.



V. J. Carns



A. J. Bolek

ALBERT J. BOLEK, 3946 E. 116th St., Cleveland, as representative for Black & Decker Mfg. Co., Dreis & Krump Mfg. Co., Niagara Machine & Tool Works, Beverly Shear Co., The Lockformer Co., Whitney Metal Tool Co., and other manufacturers of sheet-metal working machinery and tools.

R. M. BADGER as district sales manager handling gas and oil heating equipment for Timken Silent Automatic Div., Rockwell Spring and Axle Co. Mr. Badger's territory will include central and northern Illinois. Other new district sales managers are W. R. Seelbach, who will cover western New York state and western Pennsylvania; C. L. Morgan, who will cover New Jersey; and G. C. Duff, who will cover northern Ontario. R. E. Loebell has been named manager of special development and J. H. Swallow has been appointed special sales representative.

THE ENTERPRISE HEAT and Power Co., Chicago, as distributor of air conditioning equipment for the Air Conditioning Div., Westinghouse Electric Corp.

Obituary

Ralph A. Taylor

RALPH A. TAYLOR, 60, district manager of the Janitrol Div., Surface Combustion Corp., for the past 17 years, died January 10 after an extended illness. Mr. Taylor was widely known among dealers and utility company officials throughout the Midwest. Prior to joining Surface Combustion Corp., he was associated with the E. H. Walker Co., Toledo.

Classified Advertising

Rates for classified advertising are 10 cents for each word, including heading and address. One inch \$5.00. Count seven words for keyed address. Minimum \$2.00.

situation open . . .

SALESMEN WANTED — For nationally advertised and nationally accepted, revolutionary tool used in sheet metal, heating, air conditioning and allied industries, wherever patterns are laid out on flat stock. Can easily and quickly become your main item, not a "fill in". This really opens all doors. Write H. OWENS COMPANY, 9300 Venice Blvd., Culver City, California.

agents wanted . . .

EXCEPTIONAL OPPORTUNITY FOR MANUFACTURERS' REPRESENTATIVES — In Ohio and Indiana, who have or can develop dealer outlets for a quality of gas and oil fired furnaces — Gravity, Hi-Boy, Counter-Flow and Basement Models, very competitively priced and with a 10 year Warranty. 30 Models — Bonnet outputs — Gas 60,000 to 200,000; Oil 76,000 to 250,000. Michigan manufacturer, established in 1924, prefers representatives working smaller territories selling direct to dealers at single, 5, 10 and 20 lot prices, assuring the dealer more profit, particularly on housing projects. In reply please give present lines carried, territory now covered and for how many years, or if you know warm air heating and want to get started as a manufacturer's representative, tell what heating experience you have had and what territory you could cover thoroughly. Write Key 963, American Artisan, 6 North Michigan Avenue, Chicago 2, Illinois.

Morrison Steel Products, Inc., manufacturers of MOR-SUN Year round air conditioning equipment has the following territories open for aggressive sales representatives: Mississippi, Alabama, Louisiana, Texas, Arkansas, Oklahoma, Colorado, Kansas and Arizona. Please write John K. Farrar, Sales Manager, MOR-SUN Furnace Division, 601 Amherst Street, Buffalo 7, New York.

Wanted Salesmen and Manufacturers representatives to represent our complete furnace line. This is one of the leading, old established manufacturers in the business. Preferred and protected territories open. Only qualified aggressive sales representatives wanted. Give full references and experience in reply. Address Key 957. American Artisan, 6 North Michigan Avenue, Chicago 2, Ill.

for sale . . .

SHEET METAL — \$100,000 volume year, returns big profits. Cleveland. With or without property. Established 7 years. Regular accounts. 5 reliable help. 3 trucks. Quality work. Will stand rigid investigation. A. KORYTA, INC. 233 THE ARCADE, CLEVELAND, OHIO.

FOR SALE — 1 — No. 1 Savage Nibler 1/4" cap. — \$500.00; 1 — 30" light Metal Roll — \$50.00; 1 — 7 ton Punch Press and Motor — \$150.00; 1 — 30" Light Metal Square Shears — \$50.00; 2 Lever Bar Shears 5 & 9" blades 1/8" cap. — \$25.00 each; 1 — 2 ton Yale Spur-gear Chain Hoist — \$75.00; 1 — 175 amps Lincoln Special Arc Welder — \$175.00. THE A. T. DINGELDEIN CO., 519 W. Main St., Springfield, Ohio, 2-4951.

... are you looking around for items or personnel? A simple classified advertisement in American Artisan will turn the trick for you quickly and at low cost.

SERVICE SECTION

Birks Pittsburgh Lock Opener



OPENS

Curved Or Straight Sections

- Easy To Operate
- Increases Production
- Prevents Injury
- \$45.00 Complete
- F. O. B. Factory

BIRKS MFG. CO.
811 Hanover Rd., Meriden, Conn.

GRAND RAPIDS

FURNACE CLEANERS

Write for Details
DOYLE VACUUM
CLEANER CO.

227 Stevens St., S.W.
Grand Rapids 7, Mich.



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